Closing the Digital Divide during the COVID-19 Lockdown:

Student, whānau and staff perspectives

GCSN

Greater Christchurch Schools' Network

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Foreword

This report and associated data-gathering and analysis was conducted by the Greater Christchurch Schools' Network (GCSN) Trust as part of its work in bridging the digital divide in the greater Christchurch region.

It focuses on remote learning during the level 3 and 4 lockdown New Zealand experienced during the global COVID-19 pandemic. During this lockdown, schools needed to transition to remote learning to minimise the spread of the COVID-19 virus.

This report summarises the connectivity of students, parents, and staff in the greater Christchurch region, assesses the experiences of learning in lockdown of these groups, and makes recommendations for further work in bridging the digital divide as well as having adequate procedures and policies in place should school closures happen again in the future.

The GCSN is a charitable trust which works to bridge the digital divide for school-aged students and their whānau through the development, implementation, and evaluation of programmes and initiatives in the greater Christchurch region.

The findings of this report highlight the ongoing impact of the digital divide, particularly for students keeping up with their peers while learning from home. It demonstrates the importance of continuing local and national initiatives to bridge that divide for school-aged students.

In particular, I would like to see focused initiatives and government funding to close the digital divide for the "last 5%" who are without devices and internet connections. This must happen to enable all students to benefit from digital learning education opportunities, and not just the 95% with devices and Internet connections. Only then will we allow all students to achieve to their potential, irrespective of ethnic or sociodemographic background.

I would like to acknowledge the efforts of Dr. Gabrielle Wall, Jordan Mayes, and Joshua James for their efforts in collating the information in this report, and Emerita Professor Niki Davis for her editing assistance.

Steve Wakefield
Chairman
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Executive Summary

The Greater Christchurch Schools' Network (GCSN) aims with this report to continue its work to bridge the digital divide. It furthers work so that schools, staff/teachers, families and students can be equitably equipped with devices and Internet connectivity so that they may engage in teaching and learning remotely. While these findings were gathered in the context of the New Zealand response to the COVID-19 global pandemic, many findings are equally relevant in a non-pandemic context.

As the pandemic progressed, New Zealand went into lockdown, closing borders and enforcing social distancing. Under lockdown, schools closed and began school holidays prematurely. After a two-week holiday for students, schools transitioned to teaching and learning remotely with teachers and students in their own homes connected to one another digitally.

Among other equity issues, **the COVID-19 lockdown highlighted the importance of addressing the digital divide for children and young people. This means that students without a suitable device and/or Internet connectivity were disadvantaged as they could not connect to their teachers, classes, or access the learning material being made available to them.** While efforts were made to provide these students with physical resources in the mail to allow them to learn, inequalities in learning and digital access were put under the spotlight.

Substantial efforts under extreme time constraints were made to provide students and families with devices and Internet connections so that they could continue to learn under lockdown. In this way, COVID-19 acts as a natural experiment in that the digital divide can be assessed through looking at who had or did not have devices/Internet connectivity prior to lockdown, who received devices/Internet connectivity, and how learning and everyday activities occurred during lockdown.

To assess this, a survey was conducted with students, teachers/staff, and parents/whānau. 3,105 participants and 150 schools/ECE in Canterbury were included in the sample. Parents made up the largest sample, and a range of age groups and ethnicities were represented.

Main Findings

Accessibility to devices/Internet was central in this study. 6.1% of students indicated they were without devices and 1.9% were without Internet connectivity at home prior to lockdown. There were no notable differences between the primary/intermediate and secondary sectors. 22.3% of parents indicated that some, but not all, of their children had devices, and 7.9% did not have devices for any of their children. 2.2% of parents indicated they were without an Internet connection at home prior to lockdown.

School staff overestimated the access reported by students and parents, as on average staff estimated 22.6% of students were without devices prior to lockdown and 15.4% were without Internet connections at home. Teachers and staff at primary/intermediate schools tended to give somewhat higher percentages of students without devices/Internet connectivity compared to teachers and staff at primary/intermediate schools.

Of those who were without prior to lockdown, 71.4% of students received a device and 30.8% received an Internet connection. 85.8% of parents were asked by their school(s) about their device/Internet status. 29.7% of parents without devices for every child received one (or more) and 33.3% without Internet received a connection. Providers included schools, parents/caregivers (for students), other family members, workplaces (for parents), Internet

providers, and community/government services. Sadly, this still leaves a digital divide in place for a small proportion of students as 28.6% of students who were without a device went lockdown without a device, and 69.2% of students without an Internet connection went lockdown without a connection.

At the time of taking the survey schools had returned to face-to-face delivery. 40% of students borrowing devices were required to return them, 25% lost their newly acquired Internet connection, and a further 25% anticipated losing their Internet in the near future. 87.9% of parents returned a borrowed device with a further 12.1% anticipating returning their device in the near future, and 20% anticipating losing the Internet connection that they received. Unfortunately, this reinstates the digital divide for the cohort of students who were without devices and/or Internet connections prior to lockdown.

A majority of teachers/staff rated their schools and themselves to be well-equipped with regards to online learning.

Parents indicated that their families use the Internet for a variety of reasons beyond just learning and work. Being equipped with a device and/or Internet enabled more activities and reduced the amount of device-sharing in households. During lockdown, Internet use changed in general with regards to how families communicate, how they work, how they shop, and how they engage with health and fitness. The Internet has been an extremely important connecting tool for families to engage with others and engage with basic everyday activities that normally they would leave the house for outside lockdown.

Teachers and staff were asked about how much support they perceived their schools to receive, and results averaged to be approximately neutral. This included technology and software support, learning and resource packs, updates and contact with the Ministry, and device and Internet connection distribution. There were no significant differences in perceived reports between teachers and staff at primary/intermediate schools and teachers and staff at secondary schools suggesting the same level of support was perceived across sectors. Parents felt well to very well supported by the children's schools on average. They also felt that schools did well in meeting their individual needs.

The results indicated that, on average, students tended to enjoy online learning and enjoyed it more than traditional book-/paper-based learning. Students at primary/intermediate and secondary schools did not differ in their mean levels of enjoyment, however, primary/intermediate school students tended to have a higher preference for devices compared to books and paper-based learning.

On average, students indicated that their learning progressed about the same, or even more than normal through learning at home. Primary/intermediate students had higher mean levels of progression than secondary students. Students with a device prior to lockdown progressed more on average compared to students without a device prior to lockdown. Both students and parents felt neutral or good about several aspects of learning such as communication, access, how work is completed, and homework.

Approximately two thirds of parents (62.3%) worked during lockdown. They reported that this made it hard for them to engage in remote learning and allowances in their schedules needed to be made. 82.2% of students indicated they had someone at home to help them learn, and this was mostly parents and/or siblings providing support. Those students with someone at home to help on average progressed more with their learning compared to those without someone. 93.9% of parents indicated they played a role in remote learning, and 62.6% had someone else (usually a spouse) to help the child(ren) with remote learning.

Students tended to not find their home environment disruptive to learning, and a majority found it less disruptive than school. Perceived disruption did not differ between sectors. Parents also tended to not find their children's learning disruptive to their own work. Parents indicated, however, that remote learning required them to leave their work and lose work time etc. Many also were not able to stop what they were doing to help students.

All participants were asked about things that were good/went well or bad/did not go well during lockdown. These were based on personal experiences, thus what went well for one participant might not have gone well for another.

The top things that students, teachers/staff, and parents found to be good or go well during lockdown were:

- Student independence and autonomy over learning
- Preferring online learning to traditional learning
- Being less distracted/more concentration
- Communication and engagement
- Pedagogy
- Family engagement with education
- Quality learning material

The top things that students, teachers/staff, and parents found to be bad or not go well during lockdown were:

- Too much distraction/unable to concentrate
- Difficulty/confusion
- Communication and engagement
- Device/Internet provision
- Workload (too much)
- Contact time
- Dependence on family for learning

Several suggestions were made for how to improve online remote learning in the future by students, teachers and staff, and parents. Many suggest that all facets of online remote learning can be improved on through clear, open communication, a strong focus on pedagogy and quality teaching, a mix of resources, and improved accessibility addressing gaps where they exist. There are also suggestions to be empathetic toward the context, such as not expecting too much from students and allowing flexibility in making learning work for them and their families. The suggestions include:

- Better devices/technology
- Better/faster Internet
- Better communication and instruction
- More teacher contact
- Lighter workload
- Better work environment
- Paper-based work
- PLD/skill building (for teachers/staff)
- Communication with parents and community
- Greater support and guidance
- Financial help

- Task suggestions
- More collaboration
- Greater flexibility
- More structure
- Individualised programmes
- Improved safety and security
- More work to complete
- Home schooling tips and resources

Recommendations

The recommendations are based on the information in this report and thus reflect the data and specific contexts of remote learning under lockdown for schools in the Canterbury region. They are focused on continuing work to bridge the digital divide and ensure that schools, staff/teachers, families and students are equitably equipped to engage in teaching and learning remotely using devices and Internet connectivity.

UNESCO (2020) make 10 recommendations to plan distance learning solutions, and these recommendations are similar to those presented below and aim to address similar issues. Direct comparisons to the recommendations of UNESCO (2020) are to ensure that the recommendations of UNESCO (2020) are considered while keeping true to the data and context presented in this report. The recommendations from UNESCO (2020) are shown in entirety in Appendix A.

1. **Focus collective efforts toward equipping schools digitally**

Schools may be better able to focus resources toward bridging the digital divide by using their resources collectively, such as through Kāhui Ako connections. Where schools can catalogue what they have, what they need, and what resources/funding they have available, this may be utilised to better inform the purchase/lease of digital devices that may be distributed to students/families to engage in online learning. This should also extend to family and community resources.

Access and inclusion are included in the recommendations from UNESCO (2020) in that inclusion in remote learning needs to be prioritised through addressing the gaps in access for those with disabilities or from low-income backgrounds.

2. **Engage with charities/funding bodies/government to secure resources**

As digital technologies are not part of centrally funded infrastructure, schools may need to focus greater attention to funding their digital technologies requirements. This includes engaging more with charities, funding bodies, and the government agencies to secure funding and resources which allow them to equip families with both the devices and Internet connectivity to enable connection and learning from home. This could occur through schools as the distributing organisation, or through some other coordinating mechanism.

3. **Establish initiatives to close the digital divide for the few students still lacking access to a device and/or Internet**

The survey identified that despite efforts across schools and the government to distribute devices and Internet connections, a small proportion of students still lacked these tools and were therefore unable to access online learning due to this digital divide. The proportion represented in this sample may, in fact, be larger as those without access were less able to complete this survey at home or away from school.

Building further on recommendations 1 and 2, it is recommended that ongoing initiatives and funding be provided (potentially through groups such as the GCSN or local Ministry of Education offices) to close the digital divide for these remaining students without devices or Internet connections. Further analysis may also reveal that Māori, Pacific, and other ethnic minorities are disproportionately represented in this group, and education achievements could be raised in targeted segments if digital access inequities are addressed.

4. **Formalise plans for remote learning**

Teaching and learning under lockdown necessitated upheaval to current systems and many found the curriculum to be limited under such conditions. It is recommended that schools plan a strategy for learning remotely and build capability by increasing online and blended learning opportunities. This will help schools adjust to such conditions more readily in the future, should the need strengthen.

Such planning should detail how privacy and data security is upheld across resources and web spaces and have clear guidelines on how information is to be shared during remote learning. UNESCO (2020) stated that the use of applications and platforms should not violate students' data privacy and security. They also state that procedures be in place to monitor student learning, provide feedback, and avoid overloading parents with check student work.

5. **Engage more with online learning tools**

Much of the online learning has been viewed positively, particularly the ease of access. Using resources, apps, and programmes such as those used by teachers and students during lockdown may be helpful additions to the curriculum and assist in adapting to similar remote learning conditions in the future, while also part of a face-to-face programme.

UNESCO (2020) recommend choosing a range of tools and platforms through assessing the digital skills of teachers and students and ensuring that tools are relevant to the needs. They also recommend that appropriate approaches should be blended but the number of applications and platforms needs to be limited. Evidently, in this report there were several complaints of the workload being too high for many.

6. **PLD for teaching staff**

Teachers require the knowledge, skills, and abilities to meaningfully engage with learners and their families digitally. Further PLD should aim to help teachers fully integrate the use of digital technologies into their regular teaching and learning. Taking a proactive approach in developing pedagogy and digital immersion will help teaching and learning to continue from home more seamlessly in the event of another time of school closures.

Teachers empowered through PLD may find such transitions smoother and more effective as they are engaging in learning which occurs in their current practice. Those staff without knowledge or experience in this field found this much more stressful after the lockdown. UNESCO (2020) confirm that training is a necessity for facilitating remote learning using digital technologies.

7. **Create or review policies**

Schools should draft and formalise policies for online and remote learning so that there are governance-level documents which outline how learning under such conditions in the future will occur so everyone is aware of what is expected of them and how incidents (behavioural, safety-related or other) are to be dealt with.

UNESCO (2020) recommend rules be in place and that students are monitored to an extent.

8. **Stronger focus on independence and agency**

One of the most positive features of learning remotely was the independence that students had over their learning and how it was scheduled and completed. Students appreciated having control over their own learning and this is something that should be implemented more in the future through focusing on opportunities for student agency reaching more students.

9. **Recognition of adults and children supporting students**

Students learning at home were supported by a range of people including parents, siblings, and peers. Teacher PLD is recommended to include design of support for these facilitators of learning, recognising the change that is necessary for remote learning in homes. Davis, Mackey and Dabner (2018) describe this cultural shift in relation to innovative learning environments and virtual schooling through which these people join the teaching team to facilitate learning.

Parents were often helpers of learning during lockdown, and UNESCO (2020) also recognise that parents need to be supported to engage with digital technologies during remote learning.

10. **Enhance online communities**

Psychosocial issues, such as feelings of loneliness or isolation, have been issues throughout lockdown as many students have been physically separated from their peers and friends. UNESCO (2020) recommends addressing psychosocial issues through mobilising tools and practices which connect schools, parents, teachers, and students with one another to ensure higher connectivity, human interaction, social caring, and proactively address psychosocial challenges students face while isolated.

They also recommend the creation of remote learning communities which enhance connectivity between teachers, parents, and school managers. This addresses isolation and loneliness while also enabling more seamless sharing of experience and strategies. Online communities are a means through which support can be garnered and distributed to ensure better outcomes for all involved in remote learning.

GCSN Post-COVID-19 Review

The global COVID-19 pandemic resulted in New Zealand closing its borders and introducing different levels of restrictions in response. This meant that on March 25 11.59pm, Aotearoa New Zealand went into Level 4 lockdown halting all face-to-face social activities and closing any non-essential businesses. Schools went into holidays early, prematurely ending Term 1 and having holidays from March 30 until April 14, at which point Term 2 began.

During Level 3 and Level 4 lockdown schools engaged in remote learning to avoid students needing to visit their school campus and break social distancing rules. Remote learning required that students learn from home using a device and Internet connection.

This relied on each student having access to both a device and Internet connection, and where one or both are missing, those students were disadvantaged and unable to learn online. Starkey (2016) identifies three types of digital divide, all of which are pertinent to this study. The first is the access divide, separating those who have access to devices and the Internet from those who do not; the second, a divide in capability between those who know how to use digital devices and those who do not; and the third, a division between those who have the knowledge, confidence and capability to use digital technologies to participate in society and those who do not. These have been addressed for a number of years through various funding pathways and school initiatives which seek to temporarily or permanently equip students and families with what they need to engage in remote online learning.

COVID-19 acted somewhat as a natural experiment in that the impact of this digital divide on student learning was directly observable for a limited time. The unfortunate reality in New Zealand is that many students went without high quality education during lockdown due to being ill-equipped.

This report is designed to review how schools and families have coped under the lockdown with remote learning, and to assess how differently those with devices fared from those without. This report concludes that there is a strong case for students having access to devices and Internet so as to bridge the digital divide.

Literature Review

The digital divide is an area of education that the GCSN has worked in extensively. The recent lockdown to halt the spread of COVID-19 has resulted in forced changes in the area of online learning which has highlighted inequalities in digital technologies to this and other nations. The digital divide inhibits student opportunities and learning, and, in times of crisis such as that experienced on a global scale recently, this can separate some students from their learning and their peers.

This literature review assists in the development of a case for digital technology accessibility for all students, including individual access to a device an Internet connection, and then examines the evidence around this digital divide in New Zealand and around the world as a result of the COVID-19 pandemic.

Digital technologies and learning

Over a decade ago, the OECD stated that digital technologies have the potential to change education and teaching in schools (OECD, 2008). They said this because digital technologies were increasingly being used in schools, and schools have the responsibility to "equip young people with the knowledge and competencies that would enable them to navigate in the online spaces and virtual worlds" (p. 13). The European Commission (2008) stated that ICT will change the core functions of education and help to build active learning communities in a networked society. Bolstad et al. (2012) stated, at the time of writing the report, that educational systems were not sufficient to address and support learning needs for students in the 21st century.

In New Zealand, this changing educational scape is being embraced. At the NZTech Advance Education Technology Summit: Leading for 21st Century Learning, the conference discussed the purposeful inclusion of Digital Technologies into the New Zealand curriculum (NZTech, 2016). This was to ensure that digital technology was a focus area for the curriculum to ensure New Zealand has a world-leading education system aligned with the needs of 21st century learning. The Digital Technologies | Hangarau Matihiko curriculum content is the product of research into digital technologies integration and, as of 2020, is now a component of the New Zealand curriculum.

Digital technologies are linked to learning outcomes in terms of general curriculum delivery. For example, technology generally improves achievement in content area learning, develops higher-order skills (such as information research, comparing and contrasting, synthesising, analysing, and evaluating), and prepares students for the workforce through giving them work-applicable skills and knowledge (Cradler et al., 2002). A meta-analysis of 112 peer-reviewed articles found that technology has a medium effect on the learning effectiveness of elementary students (Chuahan, 2017). This research also suggested that technology is particularly effective for learning general subjects and science, moderately effective for learning language, mathematics, and technology, but not effective in learning social studies. It also recommends using technology in informal settings and for longer durations. A growing body of evidence shows the positive effect technology can have on learning.

How digital technologies exert their influence (beyond what occurs through traditional teaching and learning) is an important consideration for any modern educational system. Game-based learning, for example, is something that technology fosters for positive learning outcomes. Scaffolding in learning, whereby a teacher or more knowledgeable peer helps accomplish tasks that would otherwise be out of reach, is achievable through software, and the software becomes the tool that helps achieve tasks (Reiser, 2004). The inclusion of

external scaffolds in a simulation game (in a "study and play" paradigm) has been shown to result in positive problem solving abilities in a post-game problem-solving assessment and did not interrupt flow, with flow resulting in positive perceived learning and enjoyment (Barzilai & Blau, 2014). The use of games has also been demonstrated to be particularly effective for foreign language learning (Chen, Tseng, & Hsiao, 2018; Tsai & Tsai, 2018). Technology facilitated game-based learning shows promise for supplementing student knowledge in a setting they find enjoyable with positive learning outcomes.

Technology assists in the development of core knowledge and skill. Multimedia technology applications such as simulated games (Barzilai & Blau, 2014) and animated cartoons (Dalacosta, Kamariotaki-Paparrigopoulou, Palyvos, & Spyrellis, 2009) are useful tools for developing knowledge and understanding in science, as well as reading comprehension, listening comprehension, and vocabulary, in some cases beyond what might be possible in traditional learning settings (Lysenko & Abrami, 2014; Potocki, Ecalle, & Magnan, 2013).

E-portfolios assist in student writing performance and are able to provide greater levels of peer feedback which further benefit writing development (Nicolaidou, 2013). A meta-analysis by Means, Toyama, Murphy and Baki (2013) found that multimedia combined with online instruction does not impact online learning outcomes, thus the teaching and material is more important than the medium.

The ability to learn from a distance also builds a strong case for the use of digital technologies in the educational system. Digital technologies are still banned in education in some states and districts in the United States out of fear or a lack of knowledge of technologies and their place in education (Digital Learning Collaborative, 2020). Distance learning represents a shift in orientation and modality in that learning (often) occurs in totally different environments, contexts, and conditions to traditional face-to-face learning. Distance learning is gaining traction as a way to connect students to subjects and learning material, as well as teachers/instructors without being confined by physical school boundaries.

A lack of uptake in distance learning may be exacerbated by negative attitudes of distance learning brought on by feelings of fear, rather than of excitement (Bunk, Li, Smidt, Bidetti, & Malize, 2015). However, a meta-analysis of distance learning by Allen et al. (2004) shows that distance learning is not as ineffective as many may believe. The meta-analysis showed that across research in distance learning, those learning by distance tend to do marginally better than those in traditional learning. This is due to the presence of several mediator/moderator variables.

One relationship was with course content, showing that the relationship is positive for foreign language learning but neutral for natural sciences, indicating that distance learning may be just as effective as traditional learning in many areas, or even more effective for those learning new languages. Furthermore, synchronous (real-time teaching) and asynchronous (any time teaching) showed no differences. This is supported by the meta-analysis by Means et al. (2013) who found no difference in learning between synchronous and asynchronous learning. Zhao, Lei, Yan, Lai, and Tan (2005) however found that a combination is the most effective. While distance learning is often not utilised out of fear or lack of knowledge, it shows promise for many students.

Participation in online learning and blended learning is dependent on access to two things: A device and Internet connection. To be able to learn away from the classroom and face-to-face settings, students require a device such as a laptop or tablet on which they can access an Internet connection to allow them to research, connect with school resources, connect with their teachers, and complete assignments etc.

Ultimately, students who do not have a device and/or Internet connection they can use at home are disadvantaged because they are unable to participate in online and blended learning to the same extent as their peers. The above research makes a strong case for technology in learning and highlights the importance of all students having devices and Internet to reap the benefits.

The digital divide in New Zealand

As stated above, online learning and blended learning is reliant on the student's access and connectivity. Each student needs to have equitable access to a laptop/tablet and an Internet connection to participate. Students who do not have these things are not offered the same opportunity, or not to the same extent as their peers. This is the basis of the *digital divide*. The digital divide is defined as the gap between those who have and do not have access to the Internet and an Internet-capable device which has been a central issue for equity (van Dijk, 2006).

This is an issue faced in New Zealand. The percentage of Internet users has risen from 82% in 2007 to over 90% in both 2013 and 2015 according to World Internet Project New Zealand surveys (Smith, Bell, Miller, & Crothers, 2016). However, approximately 100,000 students in 40,000 households in New Zealand currently do not have a suitable Internet connection to support their learning (Education Counts, 2019). The New Zealand Government is currently focused on providing Ultrafast or Rural Broadband to more than 1000 schools, and when this initiative is completed in 2022, 87% of New Zealanders will live in locations where fibre broadband is accessible (Starkey, Eppel, Sylvester, Daoud, & Vo, 2018). Digital technologies are not part of centrally funded infrastructure for schools though, and schools thus need to focus their resources and make use of external agencies and charities to procure devices and Internet connectivity.

Infrastructure is not the only concern regarding inequitable access because it may take until 2025 for 99% of New Zealanders to have broadband speeds of at least 50Mbps (New Zealand Government, 2015). While efforts need to be made to connect the remaining New Zealanders to high speed Internet, inequalities still remain for reasons other than infrastructure. Data from the World Internet Project in 2017 suggests that 5.6% of New Zealanders are non-Internet users who have never used the Internet while 0.5% of non-users have used the Internet before but no longer do so (Díaz Andrade, Hedges, Karimikia, & Techatassanasoontorn, 2018). This indicates that most of those who don't use the Internet are those who have not experienced it (InternetNZ, 2018). The same paper by Díaz Andrade et al. (2018) breaks down the reasons people in New Zealand do not use the Internet. These include not being interested or seeing its use, don't know how to use it, not having a computer or device, not having time, finding it too expensive, having no Internet connection available, and being worried about security and identity. For those choosing not to use the Internet, it is suggested that this is a function of age and understanding of the technology. For those who are unable, this can be due to factors they have little control over such as financial constraints to own a device and pay for a connection.

This affects some communities more than others. The groups which are prone to relatively low access to the Internet include those living in social housing, people with disabilities, Pasifika, Māori, people living in large rural towns (10,000 to 25,000 people), older members of society, unemployed people and those not actively seeking work (New Zealand Government, n.d.). Children in these families and communities are among those who often do not have devices or Internet access. Those on the bad side of the digital divide in New Zealand do not get to experience the benefits of online and blended learning to complement their learning on their school campus.

COVID-19 and the digital divide

This paper has discussed the potential benefits of online and blended learning using technology. In normal circumstances, efforts in bridging the digital divide aim to connect students with devices and Internet connections to enable this learning and ensure that learning is able to occur outside of school. COVID-19, however, has drastically changed perspectives globally.

In the first quarter of 2020, 191 countries shut down primary and secondary schools, affecting almost 1.6billion students (Bryant, Chen, Dorn, & Hall, 2020). The worldwide pandemic of COVID-19 has quickly spread, and the first case in New Zealand was reported on 28 February 2020. Since then, and at the time of writing, New Zealand has had 1,569 total cases and 22 deaths from the virus. The New Zealand borders and entry ports were closed to non-residents at 11.59pm 19 March 2020. At the time of compiling this report, the country has returned to Alert Level 1, removing social distancing restrictions.

Across the world, school closures highlight inequities and drawn attention to the digital divide. Addressing inequities in remote learning is a complex challenge, but needs to be front and centre in efforts to safely close and reopen schools (Bryant et al., 2020).

On Wednesday March 25 at 11.59pm, New Zealand was put into Level 4 lockdown which halted social activities and ended the school term prematurely. School holidays were from March 30 to April 14, and following that, schools engaged in remote learning for a large portion of Term 2. This was because of social distancing rules which meant that students and staff needed to stay at home in their 'bubbles' during Level 3 and 4 lockdown. In terms of online learning mediated by technology, this has been non-optional. Not having a device or Internet connection means that learning cannot easily occur, and students may potentially fall behind their peers and be socially disconnected.

Recent research in New Zealand has gathered Māori and Pacific parent voice with regard to education during the COVID-19 lockdown. This research has highlighted the importance of ensuring students are connected to devices and Internet for equal learning opportunities, "Perhaps, the biggest of these challenges is finding ways to minimise the potential of the situation to exacerbate existing inequalities in the education system" (Riwai-Couch et al., 2020, p. 5).

The COVID-19 pandemic has exacerbated the digital divide due to worsened financial security. Galicki (2020) conducted a review of the financial impact of COVID-19 on financial wellbeing of New Zealanders for the Commission for Financial Capability. 3,085 people were surveyed on their personal and household finances under the COVID-19 pandemic and lockdown. As of April 28, it was estimated that 232,500 households (13%) in New Zealand lost a substantial part, or all, of their earned incomes as a result of COVID-19. A further 447,000 households (25%) experienced a reduction in income of less than a third. It was estimated that 34% (608,000) households are facing financial difficulties and are struggling to pay bills and meet financial commitments.

Financial impacts adversely impact some groups more than others, including Māori, Pacific peoples, rental households, and sole parents. Where money becomes a significant stressor that families face, giving children devices and high-speed Internet connections often has lower priority than food and clothing. For families who are struggling with basic costs and covering bills, affording a computer and Internet connection for remote learning may be unfeasible, and with more families facing financial pressure due to COVID-19, the lockdown has exacerbated the financial inequalities that contribute to the digital divide.

It is imperative that remote learning is provided to as many students as possible with special attention to the most vulnerable students and schools (Bryant et al., 2020). The Education Empowerment Foundation (2020) stated that ensuring access to technology is key, particularly for disadvantaged students, during events such as the COVID-19 pandemic. Systematic reviews of remote learning typically cite a lack of technology as a barrier to remote instruction and that support is required to ensure disadvantaged students have access to such opportunities, which is now particularly evident during the COVID-19 pandemic (Empowerment Foundation (2020). Riwai-Couch et al. (2020) stated in their research on Māori and Pacific parent voice that the COVID-19 crisis has provided an opportunity to work more closely with whānau to rethink how education can best be provided to meet the needs of all New Zealanders and address some of the inequalities in the education system.

It is apparent, across research and anecdotal evidence during the COVID-19 pandemic, that the inequalities in education systems are exacerbated by schools shifting to remote learning due to some families/communities being ill-equipped with devices and Internet. The students in these families are disadvantaged compared to their peers as they cannot easily engage in learning and receive instruction from their teachers and schools. Where inequalities are not met with swift action, learning may be adversely impacted. This is particularly true of some communities in New Zealand who have been differentially impacted by financial strain and uncertainty.

Teaching and learning under COVID-19

Throughout the COVID-10 pandemic, research and articles have been released globally highlighting the importance of education during the pandemic, as well as methods and strategies which are important for maintaining a high quality of education when learning is remote.

The Education Empowerment Foundation (2020) conducted a review of 60 systematic reviews (a second order meta-analysis) to provide a rough overview of what the literature has to say about remote learning situations. While much research is not dedicated to situations as specific as COVID-19 as this is a recent development, research on remote learning can be applied to the current situation to help inform education systems of what aspects of learning are important in remote settings etc.

One aspect of learning under COVID-19 that the Education Empowerment Foundation (2020) emphasised is the importance of the teaching quality rather than the medium through which lessons are delivered. This means that effective teaching practices such as expectation setting, scaffolding, and feedback etc., are more important than how or when the lessons are provided.

There are, however, features of the learning that are particularly important to highlight during remote learning instances. This includes peer interactions, supporting independent work, and matching remote learning approaches to suit different types of content and students (Education Empowerment Foundation, 2020).

Peer interactions have the potential to have some of the most profound positive impacts on student learning outcomes (Bernard et al., 2009; Means et al., 2013). When purposefully designed into distance learning practices, peer-to-peer interaction has even greater benefits (Borokhvski et al. 2012). Student interaction in remote settings may be facilitated by message platforms or online forums (Poirer, Law, & Veispak, 2019).

One particularly useful feature of peer interaction is the exchange of feedback between peers and peer evaluation protocols (Cui & Zheng, 2018). Beyond learning outcomes, however, technologies and Internet communicative use may be useful in reducing feelings of depression and loneliness and improve perceived social support and self-esteem (Shaw & Grant, 2004). The research builds a strong case for facilitating student collaborative learning, peer feedback, and social interaction which have positive learning and personal outcomes.

Supporting independent work during a crisis such as COVID-19 is a valuable strategy for assisting in the development of important cognitive processes including metacognition and self-regulation (Education Empowerment Foundation, 2020). Computer-assisted learning can assist in metacognitive scaffolding by prompting learners to think about successful strategies for learning or when to request help (Verschaffel, Depaepe, & Mevarech, 2019). Working independently with computers helps students develop cognitive skills and facilitating that work by providing advice and answers when needed can result in positive outcomes during remote learning scenarios.

It is, however, important to consider what remote learning practices and approaches are best suited to the content and age of students. Learning through the pandemic may put a lot of schools and staff into times of extreme uncertainty, it is also important to consider some of the individual needs of students and what approaches to teaching and learning work well for the classes and for the individual students.

It is also clear from the pressure and crisis that schools across the world are feeling that these are not ordinary times and cannot be approached with ordinary measures to protect disadvantaged students from learning loss. Bryant et al. (2020) highlight the importance of maintaining health, safety, and support throughout these difficult times. They state that schools should take measures to ensure that students and families are remaining safe and secure during lockdown. Home might not always be the safest place for students during lockdown. Families may also struggle to meet basic nutritional needs of students. Schools may be able to check in and intervene to assist families in maintaining their safety and security.

Supporting teachers and staff is also important throughout this crisis (Bryant et al., 2020). Many have young children of their own to support during lockdown and will be feeling increased pressure across roles. Teachers and staff require support and guidance, and provision of centrally provided content would ease pressure. Some would benefit from a cooperative approach through being provided with tools and resources to shape material to meet their students' needs. Collaboration between staff, both within and between schools, may also be essential.

COVID-19 may also be assessed from the perspective of opportunity to further education and its role in shaping lives. An article by Hadwen (2020) suggested that COVID-19 is an opportunity to empower students, opportunity for deeper learning, opportunity to be empathetic, opportunity to be grateful, and opportunity to connect. Empowering students means embracing competency-based education allowing students to have greater autonomy over scheduling, learning pace, and utilising resources to have a good learning experience.

Personalised learning puts the student in the driver's seat and empowers them to have greater control over their learning. Emphasising competency rather than content also allows for deeper learning and more meaningful learning experiences. Rather than lamenting over what cannot be covered, learning can focus on the application of content to communication, problem-solving, and critical thinking.

Hawen (2020) suggests that social/emotional components of education can be enhanced through remote learning. This means showing greater empathy to students, staff, and families to support social and emotional learning and wellbeing. Gratitude is another important opportunity as a lot of schools and communities are making significant efforts to support people in times of need. Finally, connecting is something schools and communities need to focus on, not only over the Internet, but with families through being present with one another to support social and emotional wellbeing.

With schools in New Zealand now returning to normal face-to-face delivery, there are important considerations in addressing education in the future to better cope with similar situations. According to Sneader and Singhal (2020), there are 5 Rs to define the transition back to normal learning. These are resolve, resilience, return, reimagine, and reform.

- **Resolve** means to focus on addressing the immediate health threat that COVID-19 poses, which largely has been achieved by New Zealand. As issues arise they are dealt with by schools (or the relevant organisations).
- **Resilience** involves addressing near-term challenges such as setting up remote learning and supporting vulnerable students. This means schools in New Zealand need to address the digital divide and ensure that students are able to participate in remote learning, not only during crises, but in general schooling.
- **Return** has been addressed by New Zealand by reopening schools and having students return to schools and face-to-face learning.
- **Reimagine** means re-inventing education to the "next normal".
- **Reform** means reconsidering education priorities in light of the lessons learned during lockdown. This means including components of remote learning, blended learning etc. more into practice.

The importance of this work by the GCSN is that it focuses on the experience of the community through the COVID-19 lockdown. From this experience, the positive and negative aspects can be identified and suggestions can be considered and actioned. Statistics on device and Internet connectivity can be reviewed so that the education system can start to address the digital divide.

Appendix A of this report details from work being done in this field from around the world in response to the COVID-19 pandemic.

Methodology

The primary source of data for this report was a survey which was distributed to principals at schools in Christchurch who then distributed the survey to staff, students, and parents/whānau on behalf of their schools. One limitation was that the survey required participants to use the Internet to participate. However, as the survey was conducted shortly after schools reopened, students could still complete the survey at school if they were unable to do so at home. Therefore it should be noted that the results are likely to underrepresent those students and families with limited access to the Internet.

The survey gave participants basic information on the purpose of the research and outlined the types of questions they would be asked. Participants were instructed not to answer anything they did not know or felt did not apply to them. To help recruit participants and motivate responses, participants were made aware that at the end of the survey there would be an opportunity to enter a prize draw for a Warehouse or supermarket voucher.

The survey assessed demographics including their connection to the schools in Christchurch, what school level participants are associated with, how many children parents have, and ethnicity. For each of these questions, a list of boxes which participants could tick were provided.

Following the demographic questions, participants were then redirected to different areas in the survey dependent on who they were. This was done using survey logic in the question "Which of the following best describes your connection to education?". Participants were able to tick more than one box. Those who were students were sent to a student survey, and those who were teachers, school leaders, or other supportive/administrative staff were sent to a teacher/staff survey. Often, school teachers and staff members are also parents themselves, so those participants who indicated they were parents only were sent to a parent survey, and those who were parents as well as teachers/staff were sent to the teacher/staff survey with the option to complete parent survey questions at the end.

Student survey

Following the initial demographics, students were asked which school they go to and answered questions about whether they had devices or Internet connectivity at home prior to lockdown and, if not, whether they were provided with either of these. Questions on connectivity were multiple-choice, and who provided devices or Internet connectivity was an open-response question. They were also asked whether they needed to return a device or lose an Internet connection.

Students were asked questions about their experience learning during lockdown. Whether they enjoyed learning during lockdown was assessed using a 5-point scale where 1 = "I really dislike working on a device" and 5 = "I really enjoy working on a device", with 3 as a neutral mid-point. They were asked whether they had a preference for working on a device or books and paper, and this was assessed on a 5-point scale where 1 = "I much prefer working with books and paper" and 5 = "I must prefer working with laptops/tablets". 3 indicated no preference, "I don't prefer one over the other".

Students were asked if they had engaged in video calls with their teacher with a "yes" "no" "I don't know" response. They were asked about how they felt about several aspects of remote learning, and this was assessed on a 5-point scale where 1 = "I has been very bad" and 5 = "It has been very good" with 3 being a neutral mid-point.

Several questions were designed to assess how well students perceived themselves to learn at home over lockdown. One question asked students to rate how their learning progressed at home compared to at school on a 5-point scale where 1 = "It has progressed much less", 3 = "No change", and 5 = "It has progressed much more".

Students were also asked questions about their learning environment such as how many people were in their household, which was a multiple-choice question. They were asked if there was someone at home to help them learn and asked to indicate who helped (from a multiple-choice list where they could select more than one option). How disruptive they found working at home was assessed on a 5-point scale where 1 = "It's not disruptive at all" and 5 = "It's extremely disruptive". A follow-up question asked if they found it more or less disruptive than learning at school, and this was assessed on a 5-point scale where 1 = "It's much less disruptive", 3 = "No difference", and 5 = "It's much more disruptive".

Open-response questions asked students:

- What aspects of remote learning had been good/gone well or been bad/not gone well;
- Whether they had any technical difficulties or connectivity issues and to briefly describe these;
- Whether there is anything that could improve remote learning in the future; and
- Whether there is anything from remote learning that they would like to see continued at school when returning to face-to-face learning.

After they had finished the student component of the survey, students were sent to the end of the survey and asked if they had any final comments to make (see the *end of survey* section).

Teacher/staff survey

Participants could belong to multiple groups. If a participant was both a teacher or member of staff as well as a parent, they were sent to the teacher/staff portion of the survey first and had the option to continue to answer questions from a parental perspective.

Participants who were teachers, school leaders, or supportive/administrative staff were asked what school they were associated with in an open-response question. How well teachers and staff were equipped was assessed through two questions: How well they perceived their school to be equipped and how well they perceived themselves to be equipped. These were both assessed on a 5-point scale where 1 = "We are very underequipped" or "I am very underequipped" and 5 = "We are very well equipped" or "I am very well equipped".

Teachers/staff were asked about what support they knew that schools had received, and this was an open-response question. How well schools were supported was assessed by asking how much support they felt their school had received to conduct learning over lockdown, and this was assessed on a 5-point scale where 1 = "Very little", 3 = "A moderate amount", and 5 = "Very much".

Not all teachers and staff are likely aware of the proportion of students who have access to devices and Internet connections. Those that responded that they had an idea were asked to indicate approximately what percentage of students were without a device at home and what percentage were without an Internet connection at home. These were both assessed using a slider which moved in 5% increments from 0% to 100%.

Things that had been gone or gone well, and things that had been bad or did not go well, were assessed with open-response questions. Finally, teachers/staff were asked to indicate anything that could help them respond to similar scenarios in the future through an open-response question.

After answering the teacher/staff survey questions, they were asked whether they had children of their own and would like to answer questions from a parent perspective, or whether they would rather go to the end of the survey. If they decided to skip, they were asked if they had any final comments to make before the survey ended.

Parent survey

If a participant was a parent and not a teacher or staff member, they were sent directly to the parent survey to complete. However, if they indicated that they were a teacher or a member of staff, they completed those questions before, and had the option to continue to answer similar questions from the perspective of being a parent.

Parents were asked which schools their children attend in an open-response question. They were asked about whether their children had devices and an Internet connection they could use to learn at home prior to lockdown, whether they had been asked about their connectivity or had been supplied with anything to aid in remote learning, and whether have had to (or will have to) return any devices or lose a provided Internet connection. These were all assessed using multiple-choice questions.

The usefulness of the Internet and devices was assessed by asking parents what they typically use the Internet for and what activities have been enabled as a result. They were also asked about whether their typical Internet use had changed over lockdown and what activities they were doing more of enabled by Internet. These were open-response questions.

Personal circumstances were assessed by asking parents whether they had been working over the lockdown and in what ways their child(ren)'s remote learning was affecting their ability to work. How disruptive children's remote learning was on work was assessed on a 5-point scale where 1 = "It hasn't disrupted my work at all" and 5 = "It has been extremely disruptive".

Parents were asked about who had been helping their children with remote learning in a home schooling situation. How parents felt about several aspects of school during lockdown was assessed on a 5-point scale where 1 = "Very poorly" and 5 = "Very well", with 3 as a neutral mid-point.

How well parents felt supported by the school was assessed on a 5-point scale where 1 = "Very poorly" and 5 = "Very well" with 3 as a neutral mid-point. How well parents felt schools have met their individual needs was assessed on the same scale, and an open-ended question on what needs they had which needed to be met was asked as a follow-up.

Aspects of remote learning that have been good or gone well, and aspects that have been bad or did not go well, were asked with an open-ended response. Anything that could improve the experience of learning from home was asked as an open-response question.

Community and 'other' survey

Those who did not indicate they were one of the 3 main participant groups (student, teacher/staff, or parent) were sent to the community/other survey questions. This was to ensure that they were able to provide feedback without answering questions that did not apply to them (if they were to take one of the other surveys). Or, if they incorrectly identified

their demographic group earlier, this was an opportunity for them to provide feedback and not miss out entirely.

Participants answering questions on this part of the survey were asked to answer "from your observations" indicating that they did not need to have direct experience to be able to provide feedback. This could be what they have observed in the people around them, the news that they have heard, and their opinion of schools working through remote learning.

These participants were asked what had been good for families/whānau, what had been bad for families/whānau, what schools did well in during lockdown, and how schools could have done better.

End of survey

The end of the survey was the same for all participants. Having finished their respective sections of the survey, they were redirected to the end which asked if they had any final comments they would like to make. This was intended to offer closure and a space to express any final feelings they had which they were not able to express earlier. It was not intended to obtain any specific data, thus information provided has assessed on a case-by-case data for whether there is anything appropriate that needs to be included to strengthen the findings or highlight any components which may need to be considered that were not considered earlier.

All participants were offered the opportunity to enter the draw to win a $50 Warehouse or supermarket voucher. Participants were reassured that by providing their email address, this would be removed from the dataset and their data to maintain their confidentiality.

Special submission

Additional data was sent from one school which conducted a similar survey. This survey was designed similarly to the survey conducted and summarised above. 20 questions which were worded in a similar way were added to the survey data. However, this means that some questions had missing data as this subgroup were not presented with those questions. A total of 405 participants came from this submission.

Analysis

The scope of data was large as multiple groups were assessed in different ways with different questions. Analysis depends on the types of questions asked. Questions were either multiple-choice (such as "yes", "no", "I'm not sure", or a list of options) where participants could select only one option, or all options that applied to them, open-response where a question was asked at the participate wrote their answer in full, or quantitatively assessed on a scale (all of which were 5-point) or percentage slider (0-100%) which allows for numerical comparisons.

Demographic questions including what school participants are associated with were all analysed by simply counting responses and indicating the percentages (out of those who answered or out of those demographics). Some demographics questions were reserved for particular groups, such as "If you are a student, what year in school are you?". It was important that only the associated demographics answered those questions, so prior to further analysis these items were removed from those who answered demographic questions that did not apply to them (such as parents answering questions for students).

Numerical questions (where numbers represent different levels) were analysed using basic descriptive statistics including means and standard deviations. Histograms were created to visualise the spread of data.

More complex analyses include t-tests for independent means, correlations, and analysis of variance. These are for numerical questions where different levels of a variable can be compared. These were conducted on an ad-hoc basis and the results show the main statistics computed as well as a *p*-value. The *p*-value denotes results which are statistically significant meaning that the strength of the relationships found are unlikely to be due to chance alone. *P*-values below .05 have been considered statistically significant.

Some comparisons were conducted between students and teachers/staff from primary/intermediate and secondary schools. Primary and intermediate schools were grouped together due to the number of full primaries (Years 1-8) which would make separating intermediate schools very difficult as comparisons with primary schools would include comparing students at the same school level (Year 7-8 in a full primary compared to Year 7-8 in an intermediate).

These sector comparisons are discussed in terms of some descriptive statistics as well as t-tests for independent means (testing the mean differences between sectors). These analyses could not be conducted for parental data as parents tended to be associated with more than one school, with many spanning different school levels. This means that any comparisons would be comparing parents who belong to both groups and it cannot be determined whether the results they gave were for one school, or their experience across schools in general.

Participants

2,787 participants responded to the online survey. 12 responses were removed for not answering anything or only entering the prize draw. 6 responses were removed for only including language that did not indicate an attempt to answer the questions and thus were not useful. Due to the logic in the survey explained above (certain demographics answering certain questions), some participants had to be removed. This is due to participants indicating they were students and a combination of other demographics. This was not deemed possible as a student in school could not also be a parent or teacher/staff member. Because of this, several participants had to be removed for belonging to incompatible groups. 69 participants were removed as they indicated incompatible groups that would not work with the survey logic. 87 participants were thus removed from the online survey dataset.

The additional submission of school survey data resulted in a further 415 responses. 9 of the student responses were found to be duplicates with identical results and narratives and were thus removed. This was the case for one parent response. This left a total of 3,105 responses with usable data. Table 1 below shows how many of each demographic group participated in the survey. As stated earlier, participants could belong to more than one demographic group (as long as those groups were compatible) which means the values in the table add to more than 3,105.

Table 1: Participant demographic groups.

Demographic group	Count
Student	1156
Teacher	291
School leader	93
Technical support staff	4
Other support staff	55
Parent/caregiver	1622
Community member	17
Other	29

Those who indicated 'Other' gave some of the following connections:

- Teacher Aide
- Relief teacher
- School Board of Trustees member
- Tertiary lecturer
- Tertiary student advisor
- Ministry of Education employee
- Wellbeing team member
- Ex-teacher
- Learning assistant
- Learning Support Coordinator
- Childcare assistant

For the purpose of statistical analyses and comparisons between groups, participants who identify as a teacher, school leader, technical support staff or other support staff were grouped together. This was a total of 418 participants.

Students were asked to indicate what year level they were. These results are shown in Table 2 below. It should be noted that not all students indicated their year level (but did answer other questions), thus the number does not total to 1,156. Students could only input a single value. The presence of 3 students below Year 5 suggests that some young children took the survey, and as they provided valid responses, might have been assisted by an adult.

Table 2: Student year levels.

Year Level	Count	Percentage
Year 1	1	0.1%
Year 2	0	0%
Year 3	0	0%
Year 4	2	0.2%
Year 5	57	4.9%
Year 6	67	5.8%
Year 7	341	29.5%
Year 8	338	29.2%
Year 9	43	3.7%
Year 10	42	3.6%
Year 11	78	6.7%
Year 12	69	6.0%
Year 13	76	6.6%
Did not answer	42	3.6%

Participants who were a member of school staff or a parent were asked which school level applies to them. These are shown in Table 3. Teachers and staff could belong to more than one group (i.e. they could be a teacher as well as a leader), however they were instructed to select only one option for the school that they work at.

Parents could select multiple options as they could have multiple children at different schools and of different age groups (thus percentages add to more than 100%). It should also be noted that participants could be both a teacher/staff member *and* parent. The percentage of teachers and staff members for each school level was calculated using the number of participants who were at least one of the four staff member options (teacher, school leader, technical support, and other support), which was 418 participants who fit one or more of these categories. The table shows that primary and secondary schools were the most represented in the sample.

Table 3: School level of teachers/staff and parents.

School Level	Teacher/staff count	Percentage	Parent count	Percentage
Primary School	159	38.0%	906	55.9%
Intermediate School (Year 7-8)	57	13.6%	575	35.5%
High School (Year 9-13)	103	24.6%	711	43.8%
Other	35	8.4%	18	1.1%
Did not answer	43	10.3%	158	9.7%

There were some teachers or school staff who indicated they worked at different levels than those presented in the survey. This included early childhood, all year levels, and tertiary.

The ethnicities of participants are presented in Table 4 overleaf. This is shown as overall numbers, student numbers, teacher/staff numbers, and parent numbers. It is important to note that participants could belong to more than one demographic group and could identify as multiple ethnicity groups. Percentages thus add to more than 100%.

Table 4: Breakdown of participant ethnicity.

	Student count	Student percentage	Teacher/staff count	Teacher/staff percentage	Parent count	Parent percentage	Overall count	Overall percentage
New Zealand European/Pākehā	761	65.8%	324	77.5%	1206	74.4%	2203	71.0%
Māori	137	11.9%	27	6.5%	204	12.6%	358	11.5%
Pacific	40	3.5%	5	1.2%	66	4.1%	111	3.6%
Asian	62	5.4%	12	2.9%	75	4.6%	146	4.7%
Australian	31	2.7%	2	0.5%	14	0.9%	48	1.5%
European	77	6.7%	35	8.4%	86	5.3%	191	6.2%
North American	10	0.9%	42	10.0%	11	0.7%	27	0.9%
Latin American	2	0.2%	1	0.2%	9	0.6%	12	0.4%
Middle Eastern	3	0.3%	1	0.2%	2	0.1%	5	0.2%
African	6	0.5%	4	1.0%	11	0.7%	18	0.6%
Other	56	4.8%	15	3.8%	69	4.3%	136	4.4%
Did not answer	241	20.8%	25	8.4%	149	9.2%	476	15.3%

Participants were also asked about their schools. Students were asked what school they attend, teachers/staff were asked about what school they work out, and parents were asked what school(s) they send their child(ren) to. A large sample of schools are represented in the data, thus for expediency they are included as Appendix B of this report.

Student Results

Accessibility

One of the central areas this research aims to summarise is the access that students had to devices and the Internet so that they could learn online at home. This is particularly important to assess during the COVID-19 lockdown as those without appropriate connectivity were unable to engage in online learning to the same extent as their peers.

Table 5 summarises the accessibility students had prior to the lockdown regarding devices which allow them to learn at home (not including smartphones) and their Internet connectivity at home. The percentages are calculated using the number of students in the sample who answered each of the questions, thus does not include those who were unsure or who did not answer.

Table 5: Student learning from home accessibility prior to lockdown.

Own device (laptop or tablet)	Count	Percentage
Yes	964	93.9%
No	63	6.1%
Internet connectivity at home		
Yes	1,005	98.1%
No	19	1.9%

The results indicate that prior to lockdown, a majority of students had access to a device and Internet so that they may learn at home. 6.1% did not have their own device (laptop or tablet) enabling them to learn from home, and 1.9% did not have access to an Internet connection at home. A total of 6 students (0.5% of students) in the entire student sample indicated they had neither a device nor Internet connection to use at home. While the numbers are small, this comes from a small sample of students in the greater Christchurch area, and when extrapolating to Aotearoa, is still indicative of a very large portion of students without the resources at home to engage in learning.

The numbers and percentages of students without devices or Internet connectivity at home were separated by primary/intermediate and secondary school to determine whether there are differences in accessibility across sectors. These are shown in Table 6. The percentages are calculated from 786 primary/intermediate students and 246 secondary students who answered this question. The percentages suggest there are no notable disparities between primary/intermediate and secondary students in terms of access to a device and/or Internet connectivity.

Table 6: Primary/intermediate students without device/Internet access.

Accessibility issues	Primary/int count	Primary/int percentage	Secondary count	Secondary percentage
Without device	49	6.2%	13	5.3%
Without Internet connectivity	16	2.0%	3	1.2%
Without both	5	0.6%	1	0.4%

Those with a device were asked about whether they have used their device to learn from home or complete homework prior to the lockdown. The results from this are shown in Table 7, and percentages are calculated from the students who indicated they did have a device prior to lockdown *and* answered this question.

Table 7: Students who have used devices for learning at home/homework prior to lockdown.

Used device for homework	Count	Percentage
Yes	686	92.8%
No	53	7.2%

Of those who had a device prior to lockdown, few (7.2%) had not used this device for learning experiences at home. Prior to learning at home becoming an absolute necessity (during lockdown), devices were largely being used for learning and homework activities.

Table 8 details the number of students who did not have a device and/or Internet connection to use at home who received a device or Internet connection from the school, government, or someone else to enable them to learn during lockdown. Statistics calculated are from those 63 students who did not have a device prior to lockdown and the 19 who did not have an Internet connection. Percentages are calculated from those who answered the question (not including those unsure or leaving the question blank).

Table 8: Student receiving devices (of the 62 without) or Internet connections (of the 19 without) for learning in lockdown.

Provided with a device	Count	Percentage
Yes	25	71.4%
No	10	28.6%
Provided with an Internet connection		
Yes	4	30.8%
No	9	69.2%

Of those who were without a device and/or Internet connection prior to lockdown, approximately one third (28.6%) were not provided with a device and two thirds (69.2%) were not provided with an Internet connection. This indicates that that these students went without the necessary resources to be able to learn from home via online learning. No students in the sample who indicated they were without a device and/or Internet connection indicated that they received neither a device nor an Internet connection, indicating that of 6 students who had neither, they all received either one or the other. **One statistic that stands out in Table 8 is that a large proportion of the students without an Internet connection were not able to get one and thus went without during the lockdown period. As learning occurred primarily in online environments, students in such situations were disadvantaged.**

Students were asked who provided their devices and Internet connection. These results are shown in Table 9. While the question was open-response (students could write their own answer), the results are aggregated and sorted into groups, and shown in the table.

Table 9: Providers of the 25 student devices and/or 4 Internet connections.

Device provider	Count
Parent/caregiver (bought prior to lockdown)	6
Sibling	1
School	15
Someone else*	1
Did not answer	2
Internet connection provider	
Parent/caregiver	1
Internet provider**	1
Did not answer	2

*One student wrote "My mother's boss"
**The provider was Spark.

The survey was conducted once schools had returned to face-to-face delivery. Table 10 below shows whether students have had to return a device and/or lose an Internet connection, or whether they anticipate having to do so soon (at the time of taking the survey).

The values in the table are from those who indicated they were supplied with a device and/or Internet connection (in Table 8). Nearly half of those provided with a device have had to return this. One quarter of those who were provided with Internet connectivity have lost it now that school has returned, and one quarter anticipated losing it at the time the survey was taken.

Table 10: Whether students have had or will have to return devices (of the 25 provided) and/or lose Internet connections (of the 4 provided).

Have had to return or lose	Count	Percentage
Yes, one or more devices	10	40.0%
Yes, Internet connectivity at home	1	25.0%
Yes, both	0	0%
Will have to return or lose		
Yes, one or more devices	0	0%
Yes, Internet connectivity at home	1	25.0%
Yes, both	0	0%

Online Learning Experience

Figure 1 below shows the distribution of scores on a 5-point scale for how much students enjoy learning on a device at home. The average was 3.37 (SD = 1.14) which is close to the mid-point "neutral", though slightly learning more toward learning on a device at home being enjoyed rather than disliked. Analysis of a normal probability plot revealed that the data is normally distributed. The data does, however, suggest that more students enjoy using devices at home to learn than not.
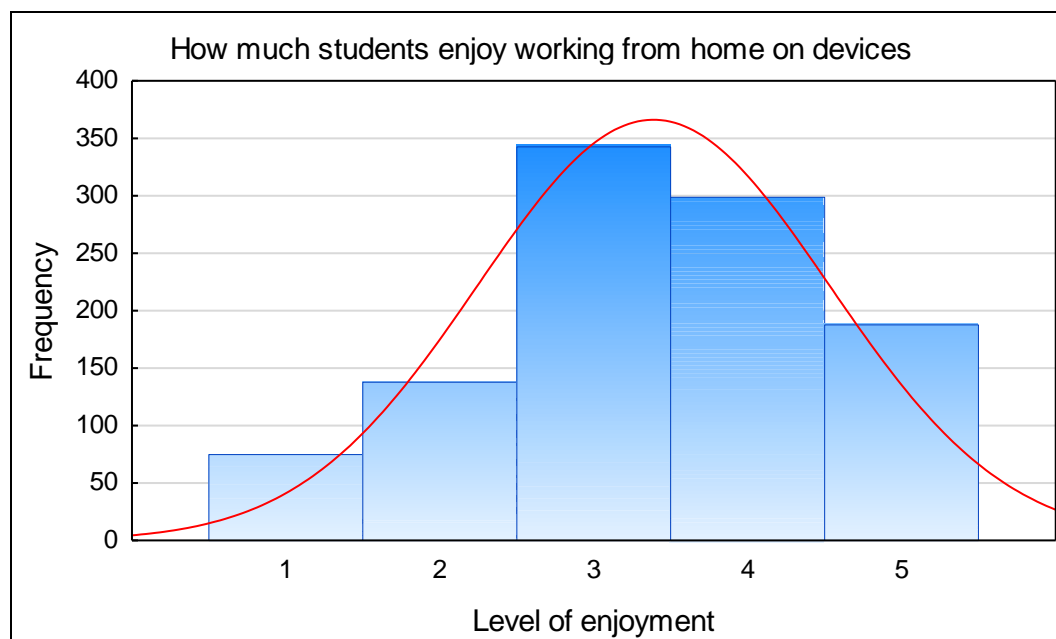

Figure 1: How much students enjoy using a device to learn at home.

A t-test for independent means was conducted to test whether the level of enjoyment of using devices for learning was the same (or statistically different) between primary/intermediate and secondary students. The results from this are shown in Table 11. This analysis revealed that the means were similar for both cohorts of students, thus the test did not reach a threshold of statistical significance. It cannot be concluded that primary/intermediate and secondary students differ in how much they enjoy learning on devices at home.

Table 11: T-test for independent means testing the difference in mean levels of enjoyment learning on devices at home between primary/intermediate and secondary students.

Group	Mean	SD	t-test	*p*
Primary/intermediate students	3.40	1.12	2.54	0.20
Secondary students	3.27	1.19		

A similar question was asked to assess how much students enjoy learning on devices compared to traditional mediums of books and paper. This is shown in Figure 2 where 3 is a mid-point of not preferring one over the other, 5 is a strong preference for devices, and 1 is a strong preference for books/paper. The results show a preference for device-based learning compared to tradition manual methods. The mean of 3.50 (SD = 1.19) suggests that the average is being pulled by higher values indicating a preference for device-based learning. A largest group however was for students who had no preference for one over the other.
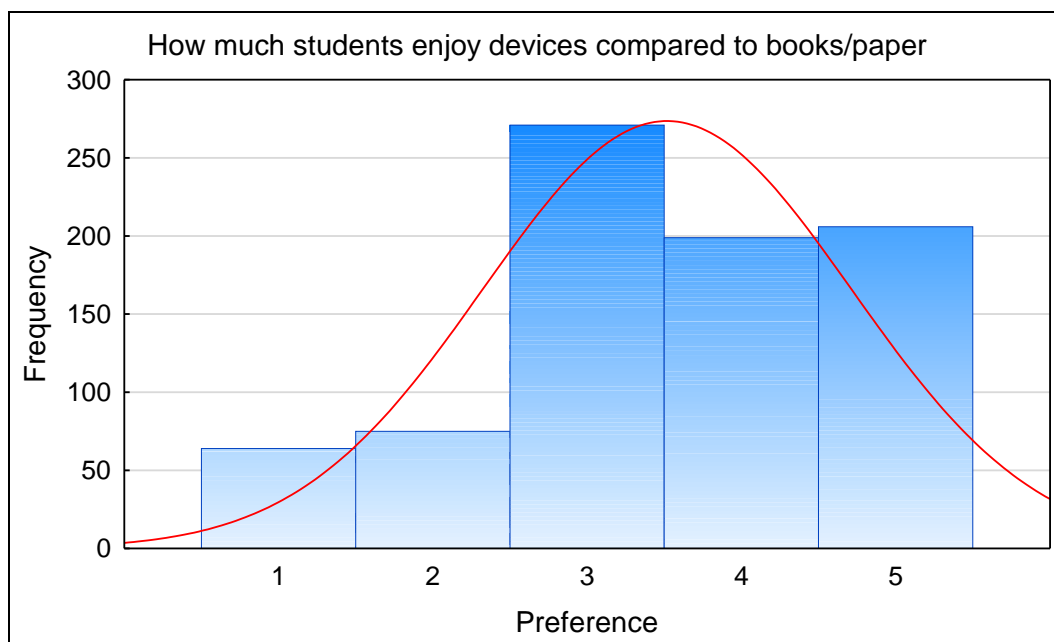
Figure 2: How much students prefer devices to learn compared to books and paper.

A t-test for independent means tested whether students from primary/intermediate and secondary differed in their preference for devices compared to books/paper-based learning. These results are shown in Table 12. The results suggest that primary and intermediate students have more of a preference for device-based learning compared to secondary students. The mean score of secondary students (3.16) was close to the neutral score.

Table 12: T-test for independent means testing the difference in mean levels of preference for devices compared to books and paper between primary/intermediate and secondary students.

Group	Mean	SD	t-test	*p*
Primary/intermediate students	3.64	1.17	5.38	<.01
Secondary students	3.16	1.19		

Table 13 below shows how many students engaged in video calls with teachers. Very few students (9.2%) indicated that they did not engage at some point with their teacher through video conferencing technology during lockdown.

Table 13: Students engaging in teacher video conferencing.

Participated in video calls/conferences	Count	Percentage
Yes	723	90.8%
No	73	9.2%

A majority were, however, equipped to be able to do so. Those without a device (prior to lockdown) and who were not provided with one (10 students), and those with an Internet connection at home (prior to lockdown) and who were not supplied with one (9 students) were checked to see whether they contribute to the portion of students without video conferencing[1]. This is shown in Table 14. In contrast to Table 13, a lower proportion of these students engaged in video calls/conferences with their teachers.

Table 14: Students engaging in teacher video conferencing who went without devices (of 10 students) and Internet connections (of 9 students).

Participated in video calls/conferences and had no device	Count	Percentage
Yes	6	60%
No	4	40%
Participated in video calls/conferences and had no Internet connection		
Yes	5	55.6%
No	4	44.4%

Several common aspects of education in general were assessed in the online remote learning context. Students were asked to rate how these things went during lockdown where 1 = "It has been very bad", 3 is neutral, and 5 = "It has been very good". The results are shown in Table 15.

Table 15: How students rated aspects of education during lockdown.

Education aspect	Mean	Standard deviation
How I speak/communicate with my teacher(s)	3.52	1.03
How I access my work	4.07	.95
How I complete my work	3.72	1.04
How I speak/communicate with my classmates	3.56	1.21
How I do my homework	3.68	1.05

The most positively identified aspect of learning during lockdown was determined to be how students access work. This may be because students found work to be accessible through devices and online platforms. The lowest rated items both pertained to communication, indicating a lack of face-to-face communication hindering perceptions of how well communication was handled during lockdown.

Figure 3 shows how students' learning progressed by learning at home during lockdown compared to learning in school. Lower numbers indicate work progressing less, higher numbers indicate work progressing more, and 3 is a midpoint where there was no perceived change in work progression. The mean was 3.20 (SD = 1.04) and data was normally distributed. While there was little to no change, a large portion of students indicated that their learning was progressing more at home. This result was not expected as lockdown was a period of prolonged disturbance and students lacked much of the structure and accountability which school offers.

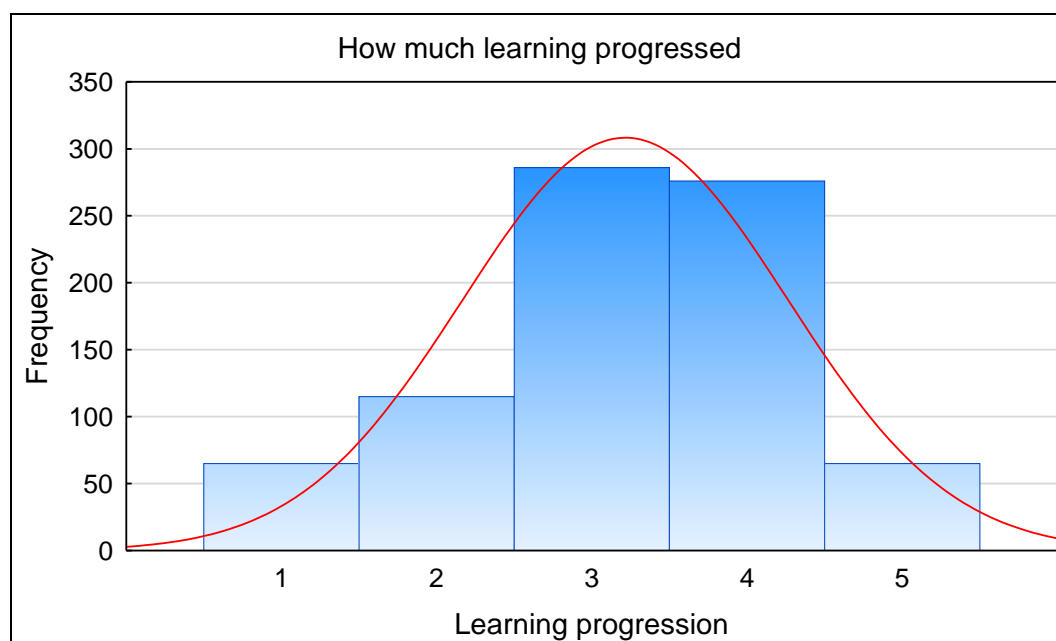[1] These figures are taken from Table 8.

Figure 3: How much learning progressed at home compared to at school.

A t-test for independent means tested whether the level of progression was different between primary/intermediate and secondary students. The results are shown in Table 16. The results are statistically significant, suggesting that primary/intermediate students had a higher level of progression learning at home on devices compared to learning at school in normal conditions, compared to the level of progression of secondary students. The mean of secondary students (3.00) was neutral, suggesting on average secondary students did not progress more or less learning at home on devices compared to learning at school.

Table 16: T-test for independent means testing the difference in mean levels learning progression between primary/intermediate and secondary students.

Group	Mean	SD	t-test	*p*
Primary/intermediate students	3.30	.95	3.66	<.01
Secondary students	3.00	1.21		

An analysis of variance (ANOVA) was conducted to assess whether students with devices prior to lockdown, students without devices who were provided with them prior to lockdown, and students without devices who were not provided with them prior to lockdown, differed in some of these measures. These students were compared on how much they enjoy learning online, and how much their learning has progressed. These students did not differ significantly in how much they enjoy learning on a device at home.

In contrast, the difference in how much learning progressed during lockdown was statistically significant (F = 4.62, *p* < .05). The results showed that students with devices prior to lockdown on average did not progress more or less in lockdown (Mean = 3.2), and students without devices prior to lockdown who were not provided with devices on average progressed less compared to what they would normally progress in school (Mean = 2.4). This result confirms that students without devices tended not to progress in their learning at the same level as those with devices during lockdown.

Table 17 shows how many people students had living in their households during lockdown. When asked if they had one or more parents/caregivers working from home (or working as an essential worker) during lockdown, 81.8% indicated that they did.

Table 17: Number of people in student households.

Number of people	Count	Percentage
1*	3	0.4%
2	29	3.6%
3	126	15.5%
4	338	41.5%
5 or more	319	39.1%

*It is highly unlikely that students lived alone, thus the question may have been misinterpreted as "how many other people lived in your household during lockdown".

Table 18 shows how many students had someone at home helping them with their online learning and who was providing the help. The percentages for the providers of help is calculated using the number who indicated they received help. Students could receive help from multiple people in their household so percentages add to more than 100%. The results show that a majority of students were provided with assistance, and this was primarily from their immediate family (mother, father, and/or sibling).

Table 18: Students who had someone at home to help with learning, and providers of help.

Someone at home to help	Count	Percentage
Yes	831	82.2%
No	180	17.8%
Provider of help		
Mother	568	68.4%
Father	397	47.8%
Other primary caregiver	6	0.7%
Brother or sister	223	26.8%
Auntie or uncle	18	2.2%
Grandparent	41	4.9%
Cousin	5	0.6%
Family friend	11	1.3%
Nanny/live in tutor/au pair	6	0.7%
Other	50	6.0%

An ANOVA was conducted to assess whether students who had received help from someone at home during lockdown had higher progression in learning than those without. The ANOVA was statistically significant (F = 10.18, $p < .01$) and shows that students who had someone had someone to help them learn at home had a higher level of learning progression compared to students who went without help.

While Figure 3 shows that learning did not progress any less for many students, Figures 4 and 5 show how disruptive students found learning at home. Figure 4 shows that many students found the home environment not very disruptive, as evidenced by a positive skew in the histogram. The mean was 2.53 (SD = 1.15).
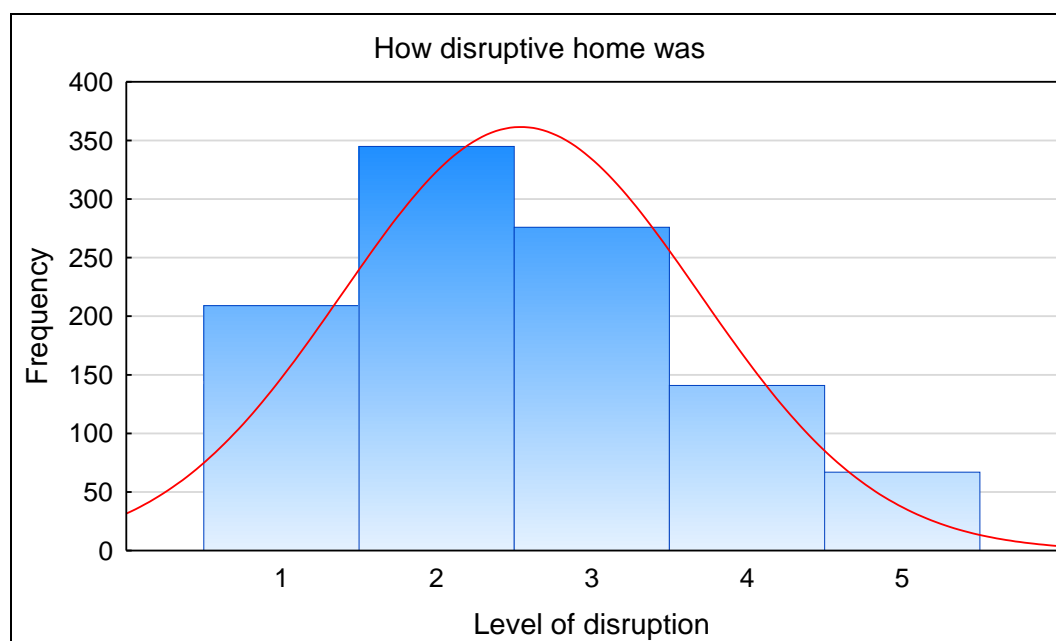
Figure 4: How disruptive students found their home environment for learning.

Table 19 shows the results from a t-test for independent means which assessed whether there was a significant difference in the mean levels of disruption between primary/intermediate and secondary students. The results indicate that the differences did not reach a threshold of statistical significance and these cohorts did not experience significantly different levels of disruption at home.

Table 19: T-test for independent means testing the difference in mean levels disruption at home between primary/intermediate and secondary students.

Group	Mean	SD	t-test	*p*
Primary/intermediate students	2.52	1.14	-.74	.46
Secondary students	2.58	1.17		

Figure 5 consolidates the results in Figure 4 and shows that a majority of students found their home learning environment to be less disruptive than that of their school environment. The mean was 2.66 (SD = 1.25).
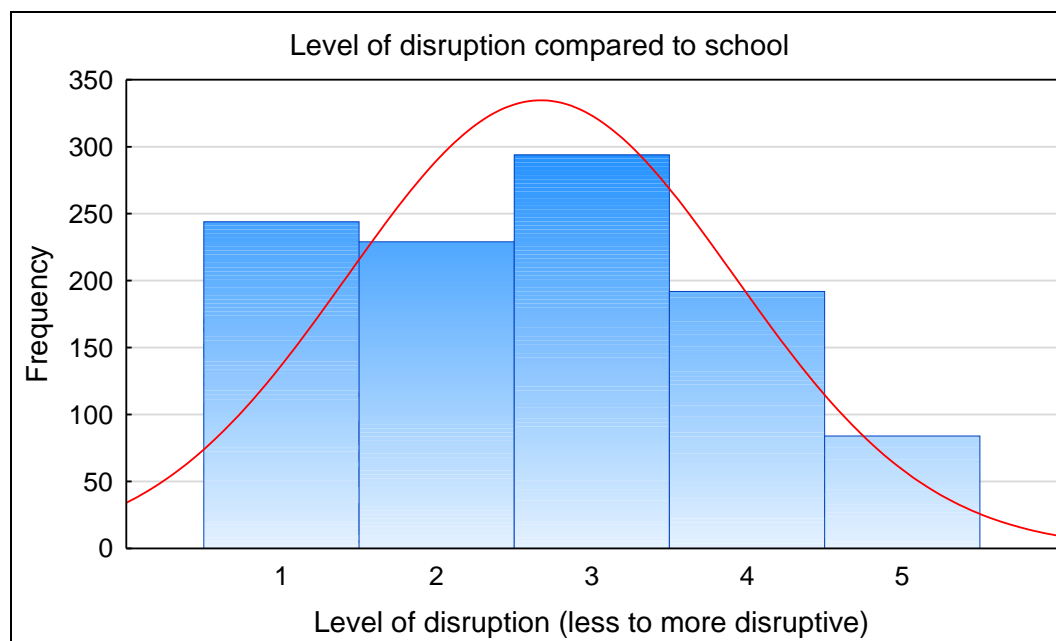
Figure 5: How disruptive learning at home was compared to learning at school.

The results of the t-test comparing primary/intermediate and secondary students is shown in Table 20. The results were not statistically significant, indicating no significant difference between primary/intermediate and secondary students and whether they find learning at home more or less disruptive than school.

Table 20: T-test for independent means testing the difference in mean levels disruption at home compared to school between primary/intermediate and secondary students.

Group	Mean	SD	t-test	*p*
Primary/intermediate students	2.67	1.22	.78	.44
Secondary students	2.60	1.33		

Regression analyses were conducted to determine whether those who were more or less disrupted by their home environment were those who had more people in their household during lockdown. A positive correlation was found between how many people were living in households with students during lockdown and both how disruptive households were and whether they were more or less disruptive than home. This was evidenced through significant correlation coefficients, .15 ($p < .01$) and .04 ($p < .01$) respectively. These results indicate that students in more crowded homes may be those who found home to be more disruptive and more disruptive than school..

The experience students had during lockdown was assessed through some open response questions and these were coded thematically. The first question was for things which students think have been good or gone well during lockdown. These are summarised in Table 21.

Table 21: Coded themes of things that were good or went well during lockdown for students.

Theme	Count
Autonomy/independence	156
Preference for online learning	104
Distraction and concentration	98
Fun	86
Health and wellbeing	75
Family	69
Accessibility	47
Knowledge and skill	37
Personal relationships	36
Leisure time	32
Communication	29
Other	22

Autonomy/independence

This was the most referenced theme by students. This was the power they had in deciding their own schedule, determining how they were going to engage in their own learning, and how they would complete work. This included students working later in the day, taking more frequent breaks to spread work out etc.

> *"It has been nice to learn at home as it allowed me to dictate time to different subjects as I wish, for example, more time was spent on assessments than other class work."*

> *"I like setting my own time frame and doing all my work at my own pace and there has been no time limit like you have to finish writing at this time i can choose."*

Preference for online learning

One of the most frequently referenced themes, this describes students who like online learning or who prefer it over traditional learning.

> *"Learning at home has been good because I prefer working on devices than books and paper."*

> *"Learning at home has been a lot more fun than it was at school and I found it better because when we work at school we learn where most of the class is at but when we work online the work is more personal to you and you are working at your level."*

Distraction and concentration

As is reflected in the data around students feeling less disrupted, students commented on how they felt less distracted and were able to concentrate more by learning at home.

"I get distracted less at home."

"I've been able to get a lot more work done during the lockdown and I've been able to focus a lot more."

Fun

On a similar vein, some students discussed how they found online learning more fun than traditional or school-based learning.

"It has been a fun experience and I am really happy to be able to have the experience."

"Learning at home has been fun, and the school days were shorter."

Health and wellbeing

Learning from home allowed students to take more self-care through spending time outdoors, sleeping more, taking breaks, reducing stress, and caring for their physical health as well such as keeping fit.

"Learning at home has helped me in taking better breaks. (eye breaks stretching etc.)."

"…being able to go outside and complete schoolwork was good."

Family

Being in lockdown meant spending more time with family. For some students, this was a positive experience connecting with their family and spending more time with them.

"It was good because I got to spend more time with my parents."

"It was fun because I got to play with my brothers and pets."

Accessibility

This theme refers to the access that students had to learning and education through online platforms and applications, and through the use of personal devices which enable work to be accessed and completed online.

"Easy access to schoolwork and help from the teacher."

"Learning at home gave me opportunities to connect with apps online to talk with my friends and access work."

Knowledge and skill

Some students felt like lockdown gave them an opportunity to learn and build skill in some areas and they perceived notable improvements in their learning.

"I learnt more skills to do with maths and I started reading more."

"…got much better at doing my math questions a lot faster."

Personal relationships

Some students discussed the importance of personal relationships and they discussed how they were able to maintain these relationships throughout lockdown through using online mediums.

"Learning at home is kind of boring but at least we can still talk to our friends."

"It fun at home coz I can still keep in contact with my friends…"

Leisure time

Working from home also allowed students to have more time to spend in leisure activities. While this is not necessarily time spent learning, it supported students' positive experience.

"Learning at home was fun because you could go for walks or watch TV whenever you wanted."

"I was cooking and baking for my Family. I walked our Neighbours dog. I played board games and piece games like UNO and Dominoes."

Communication

Students are commonly referred to as digital natives, thus much of their communication already occurs through online mediums facilitated by technology. During lockdown, many commented that communication was easy to maintain throughout the period.

"…getting in touch with friends and teachers was easy."

"Learning at home was easy and the video calls worked very well. I could contact my teacher and friend and talk to them on video calls."

Other comments were more specific feedback including personal circumstances or general comments such as "I have completed my school work in lockdown times".

Table 22 shows the coded results of things that were bad or did not go well during lockdown. There are similarities to those shown in Table 21.

Table 22: Coded themes of things that were bad or did not go well during lockdown for students.

Theme	Count
Distraction and concentration	261
Difficulty and confusion	82
Communication	74
Personal relationships	52
Workload	51
Accessibility	45
Health and wellbeing	25
Boredom	19
Device dependence	18
Other	11

Distraction and concentration

The most commonly reported theme was that lockdown made them too easily distracted and they were unable to concentrate at home.

> *"When I was working my brothers would be having meetings with their teachers and it was quite distracting."*

> *"It is a little hard to concentrate at home because I live with 4 other people."*

Difficulty and confusion

Some students found online learning difficult and confusing and lockdown made them stressed. Some complained about the expectations placed on them being too high.

> *"Following instructions was harder then being able to talk face to face with a teacher."*

> *"Some work was a little more confusing as there wasn't a face to face connection, so it couldn't be explained as well."*

Communication

Communication was difficult for some and the lack of face-to-face communication made learning more difficult. There were also students who complained about a lack of communication in not being able to get a response when they needed it.

> *"I found that when emailing a teacher it takes them much longer to reply rather than if I was in a classroom and the teacher was there and would come to me instantly."*

> *"But it was a bit hard if i didnt know how to do something because i had to email my teacher and wait for a quite a while for them to respond."*

Personal relationships

Some students missed their personal relationships and many struggled with feelings of loneliness.

> *"It has been bad because I couldn't see my friends."*

> *"The worst thing about the lock down was loneliness and getting bored."*

Workload

Workload was a common complaint as some students felt they were given more work over lockdown than what they could realistically handle. This may be exacerbated by the fact that some students find work harder to complete in their own homes and perceive work to be harder and more time demanding than what it would be under normal circumstances.

> *"I found it difficult to finish my work on time because I thought in my opinion that there was lots of work."*

> *"I found it hard to keep up with the amount of school work that was given to me."*

Accessibility

This theme was the opposite to what was shown in Table 21. These students felt that it was difficult to access learning using devices and online platforms and apps.

"My internet was slow so it was a bit hard to do my work."

"It was hard to communicate with teachers if they used a different website than our original classroom teachers. eg is our classroom teacher used Hapara and the other one used google classroom."

Health and wellbeing

For some, issues of getting outdoors, fresh air, exercise, and maintaining mental and physical wellbeing were exacerbated by lockdown.

"Sitting down the whole day."

"I haven't been able to exercise as much."

Boredom

There were also students who struggled with feeling bored during the lockdown period.

"I found learning at home was pretty boring at sometimes."

"Sometimes I would get extremely bored and not want to any work."

Device dependence

While some students like working on devices rather than paper and pen, others felt there was too much dependence on devices to engage in learning.

"Everything was on a device."

"It was on a device most and I didn't like that I prefer pen and paper."

Students were asked about any difficulties they faced with setting up or using technology during lockdown, and these results are displayed in Table 23. There is some overlap with Table 22 in that accessibility issues are echoed.

Table 23: Issues students faced with setup or usage during lockdown.

Theme	Count
Poor/no Internet	116
Broken/faulty device	18
Website and software issues	17
Limited Internet (Internet cap)	3
Other	1

Table 23 shows that approximately 10% of the student sample had poor or no Internet which would have affected their ease of access to online learning.

Table 24 details the coded data for improvements that students recommended to make learning from home easier in the future.

Table 24: Coded themes of improvements to make learning from home easier in the future for students.

Theme	Count
Better communication and instruction	97
Lighter workload	62
Better work environment	47
More teacher contact	41
Better/faster Internet	33
Better devices/technology	21
Paper-based work	20
Other	38

Better communication and instruction

Learning could be improved for some students if they had clearer instruction and improved communication. This includes class-wide communication and communication with class peers to collaborate in work. This may be difficult to implement, however students identified that not knowing what to do and not being able to seek help were things which impeded their learning.

"Probably going on a whole class call on Mondays. So we can see each other and ask questions verbally if we need to."

"The work in the future can be explained more clearly and there could be more work as well."

Lighter workload

Those who complained about an excess of work commented on needing a lighter workload and work which is easier to complete.

"Maybe a little less work, a longer time frame to complete it and no must dos."

"Less school work given to me. I was given a lot to do."

Better work environment

This theme refers to comments that students could have a better personal space to work. There is little schools can do to change students' living situations and their workspaces, however this is something that students felt could improve their learning. Students frequently referenced being interrupted by family and noise at home.

"That no one would come into my room and not tell me not to jobs when doing school work so I can do it."

"Having my own work space."

More teacher contact

One particular issue students would like to see addressed is how they receive support and one-on-one contact from their teachers. They felt that when they did not know what to do or how to do something, they would go long periods without answers.

"I think the fact that you couldn't talk face to face disrupted my learning a bit."

"Yes I would really need more help and have more Zoom meetings every morning."

Better/faster Internet

A common complaint was that Internet was slow or unreliable which can affect the access of learning but also interrupt learning activities such as video calls or interactive activities. Some also complained that multiple people in house using the Internet at once created a problem.

"If the wifi wasn't so slow sometimes."

"A bit better internet connection."

Better devices/technology

This theme pertains to those who felt their device hindered their learning. Things such as having laptops instead of tablets, or having devices which were faster and more reliable were included in this theme.

"Having a laptop not an iPad."

"Faster running (PC)/not glitchy and slow also more storage."

Paper-based work

Students who valued more paper-based work recommended offering more of this type of learning so as to not rely solely on devices and Internet.

"Maybe more maths book work."

"Not as much online stuff and not just all work."

Students were asked about what aspects of remote learning they would like to retain with schools running in more normal circumstances. The coded data is presented in Table 25.

Table 25: Coded themes of what students would like to retain in normal schooling.

Theme	Count
Greater autonomy/independence	103
Continued use of online platforms	100
Continued use of devices	43
Knowledge and skill	27
Exercise and P.E.	7
Other	39

Greater autonomy/independence

One of the valued aspects of remote learning, being able to have control over learning and scheduling, is something students would like more of in mainstream education.

"Getting to pick when i get to do work."

"Well I liked the fact that you didn't have to work in school hours, you could just wake up at 9:30 and finish and 12:00 then start again at 4:00 or you could wake up really early and still be able to do school meaning you would finish early. You could sleep during lock-down and I just really enjoyed being able to plan out my day without a specific time it needs to be between."

Continued use of online platforms

This included various platforms such as Hapara and online communication mediums such as Zoom or Google Meet. This could enable more online learning in the future.

"More online learning and working with friends."

"Use the websites like education perfect and maths buddy and things like that."

Continued use of devices

Some students would like to continue to use devices as a primary learning tool. This is due to using devices being a preference compared to more traditional methods such as paper and books.

"Continue to use devices for school work."

"Doing most work on devices as I find it easier to organise my work and focus on my work."

Knowledge and skill

Some students would like to retain some of the activities and things they learned during lockdown.

"To still do the challenge thing that [our teacher] gave us one every day."

"More art because i really like doing drawing."

Exercise and P.E.

Lockdown was an opportunity for some students to get a lot of physical activity and outdoor time. In some cases, outdoor activity was encouraged through school and students were given activities to do during lockdown to maintain their wellbeing.

"The exercise challenges."

"Maybe like having breaks often and going for like bike ride I know that's not possible but going for a run."

Teacher/Staff Results

Accessibility

Teachers and staff may be less able to comment on the access students have to their own personal devices and Internet connections at home without relying on observations which may be influenced by their perceptions and biases. Teachers and staff were thus asked to provide an approximate percentage (out of 100%) of students who a) were without access to a device prior to lockdown and b) were without access to Internet connectivity at home prior to lockdown *if* they knew this data. Staff who were not aware of the answer are assumed not to have answered.

Figures 6 and 7 show the distribution of figures provided by staff for students without devices and Internet connectivity at home. The histograms had a minimum of -10 because the numbers on the x-axis represent the maximum value of the bins, and 0 was the maximum level of its bin, so the frequency in the -10 to 0 bin show the frequency of people selecting 0%.
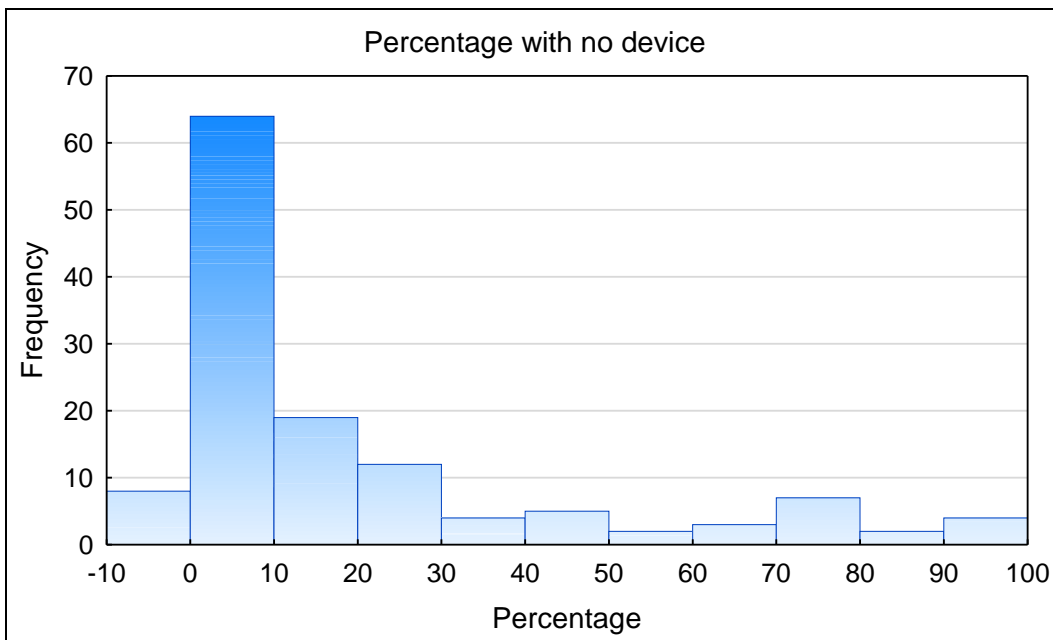

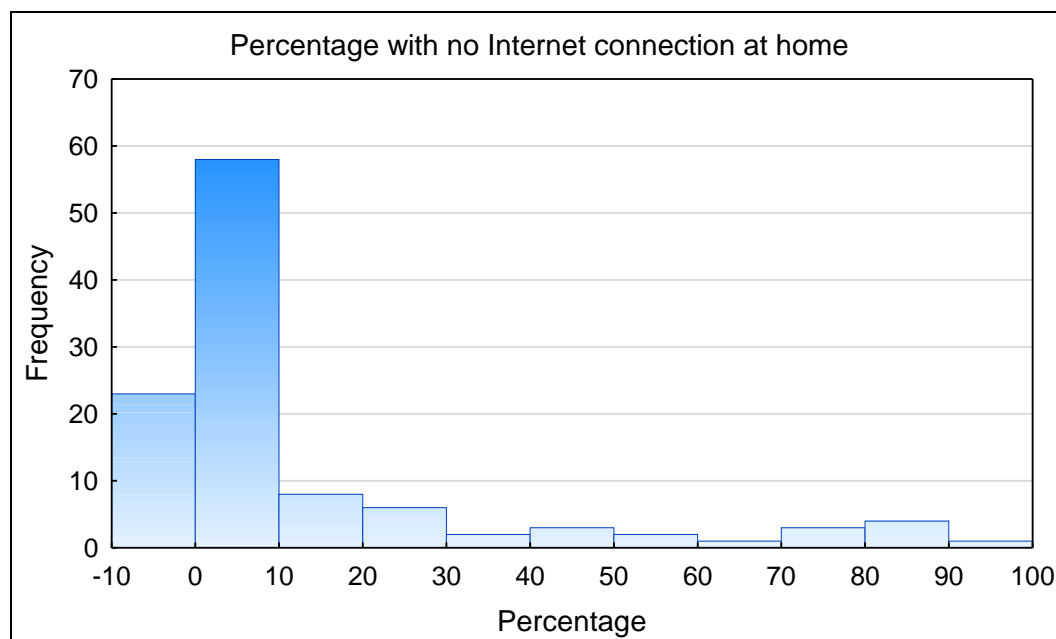Figure 6: Teacher/staff indicated percentage of students without a device.

Figure 7: Teacher/staff indicated percentage of students without Internet connectivity at home.

A majority of teachers and staff indicated that 10% or fewer of students were without devices and/or Internet connection prior to lockdown. The mean percentage given by teachers/staff for students without devices was 22.6% (SD = 25.98), and for students without Internet connectivity was 15.4% (SD = 23.47). This confirms that there was a larger gap in device ownership than Internet connectivity, as perceived by teachers/staff who have an idea of the data.

Table 26 shows the mean percentages teachers/staff indicated for students without devices and Internet connectivity, separated by primary/intermediate and secondary. These results show that there may be a tendency for secondary school teachers/staff to believe that fewer of their students are without devices and Internet connectivity compared to primary/intermediate teachers/staff.

Table 26: Primary/intermediate student accessibility rated by teachers.

Accessibility issues	Primary/int mean percentage	Secondary mean percentage
Without laptop	24.45%	19.56%
Without Internet connectivity	17.46%	10.78%

Teachers and staff were also asked how well equipped their school was, and how well equipped they were personally for teaching and learning through lockdown. Figure 8 shows how teachers/staff rated their school for how well equipped it was going into lockdown, and Figure 9 shows how they rated themselves in terms of equipment. Both figures show that teachers mostly perceived their schools and themselves to be well-equipped leading into the lockdown. The means ratings in each were 3.98 (SD = 1.00) and 4.33 (SD = .94). In comparing the figures, there was a trend that teachers/staff perceived themselves to be better equipped than their school.

How well staff perceive their schools to be equipped for online learning
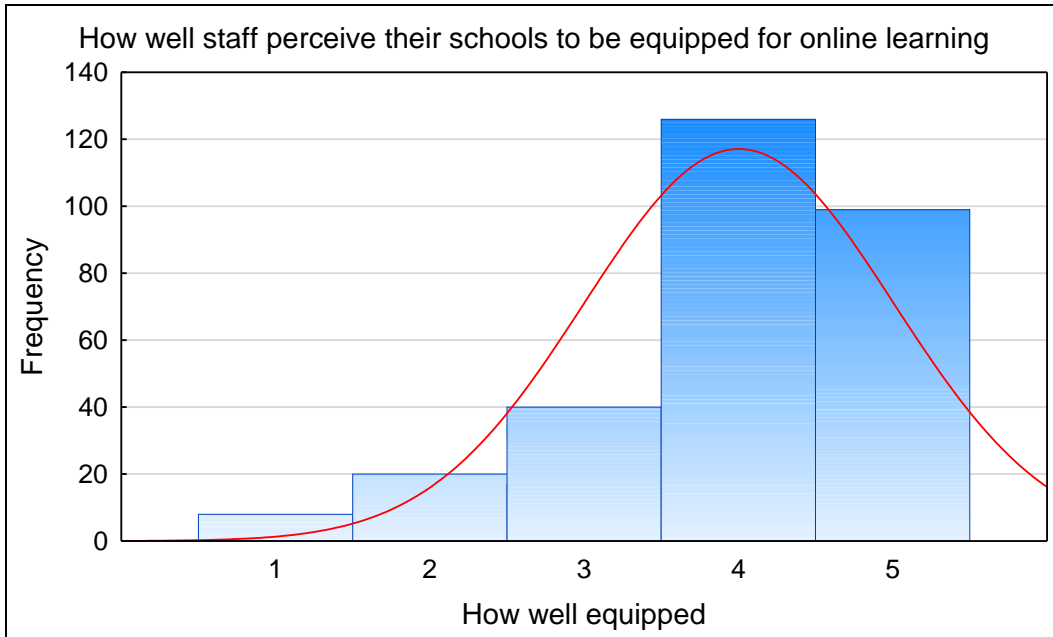
Figure 8: How teachers/staff rated their school for how well equipped it was for online teaching/learning going into lockdown.

How well staff perceive themselves to be equipped for online learning
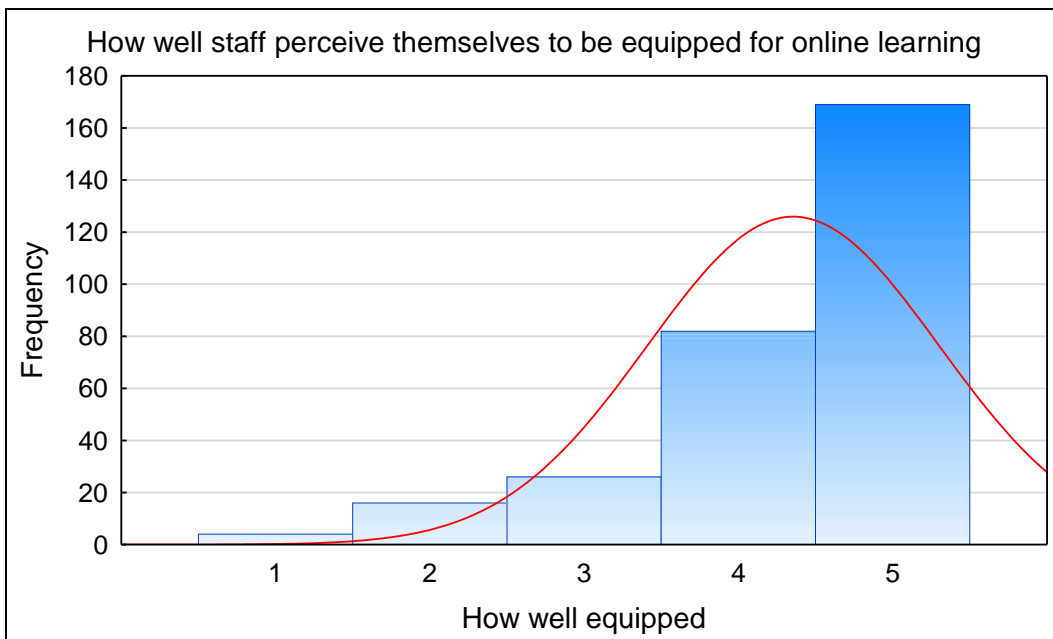
Figure 9: How teachers/staff rated how well equipped they were personally for online teaching/learning going into lockdown.

Support for Remote Learning

Teachers and staff are reliable sources for data on the levels of support the schools received in order to engage in remote online learning. Figure 10 shows the ratings that teachers and staff gave for how much support they perceived their schools to receive. The graph is somewhat normally distributed around the mean of 3.15 (SD = 1.21), indicating that many teachers and staff members perceived their schools to receive a moderate to high level of support leading up to the lockdown.
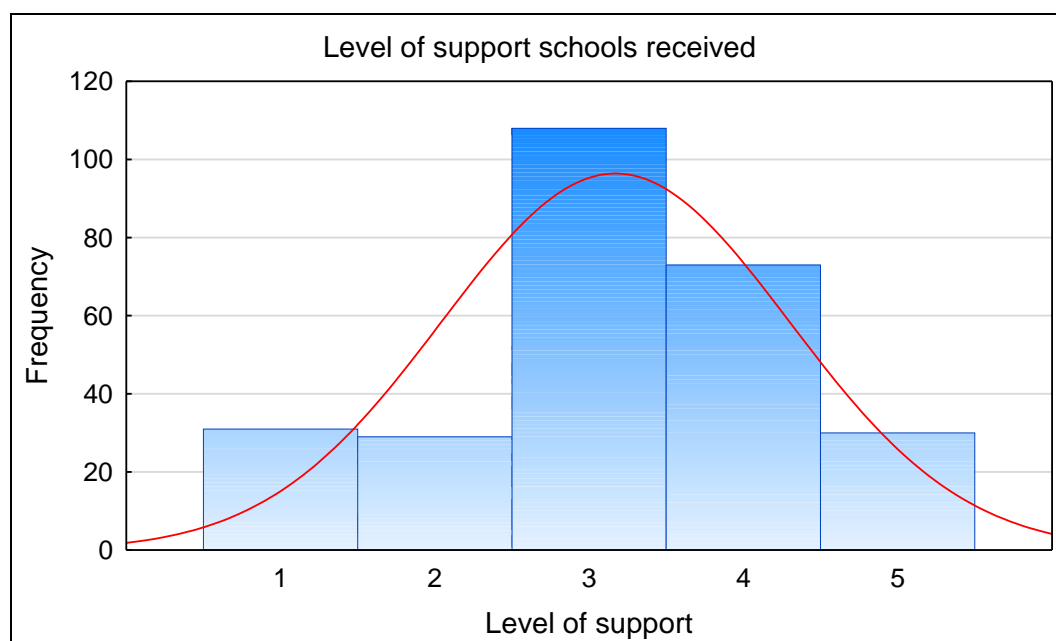
Figure 10: The level of support teachers/staff perceived their schools to receive leading up to lockdown.

Table 27 shows the results from a t-test for independent means comparing teachers working at primary/intermediate schools and secondary schools on the mean levels of support they perceived schools to receive. The results suggest that teachers/staff from primary/intermediate schools and secondary schools did not perceive different levels of support.

Table 27: T-test for independent means testing the difference in mean levels of perceived support schools received between teachers/staff at primary/intermediate and secondary schools.

Group	Mean	SD	t-test	*p*
Primary/intermediate teachers/staff	3.11	1.11	-.57	.57
Secondary teachers/staff	3.20	1.12		

Staff were asked what support they received. These were analysed into themes which are shown in Table 28.

Table 28: Coded themes of what support teachers/staff perceived their schools to receive.

Theme	Count
Technology and software support	75
MOE updates and contact	24
Device and Internet distribution	28
Learning/resource packs	18
Other	3

Technology and software support

This includes support for online platforms and use of devices for online teaching and learning. This includes conversations as well as provision of learning tools (for professional learning).

"Support with programmes and devices."

"PLD from MOE Provider."

MOE updates and contact

The MOE provided direct support to schools and staff perceived this to be helpful. This involved ongoing updates and open channels of communication.

"Advice from MOE sites and e-Mails...copious e-Mails offering different things."

"Regular updates from Ministry."

Device and Internet distribution

While a contentious issue due to the urgency of lockdown and the pace of change, teachers and staff perceived support in the form of distributing device and Internet connections.

"Device provision for families without devices."

"Devices for students as well as internet access."

Learning/resource packs

Some staff received resources to help with teaching and learning in the form of resources and packs which assist staff in delivering lessons and material. Some of these resources were distributed directly to students so that they have learning resources available to them, especially where it was recognised that they had difficulties connecting via online mediums.

"Home learning packs from MoE."

"We had learning packs delivered to some students."

Online Teaching/Learning Experience

Table 29 shows the coded themes on what teachers/staff felt were good or went well during lockdown.

Table 29: Coded themes of things that were good or went well during lockdown for teachers/staff.

Theme	Count
Communication/engagement with students	98
Pedagogy	69
Communication with parents and community	67
Accessibility	59
Organisation/coordination	58
Teacher/staff personal qualities	24
Positive feedback	19
Additional support	15
Lesson planning	10
Learning/resource packs	10
Device/Internet connection provision	9
Other	5

Communication/engagement with students

One positive was that teachers and staff could still have contact and a connection with students during lockdown. This meant that teachers/staff may be able to help with learning issues as well as provide pastoral support and give students reassurance.

"Connecting with students, students hearing and seeing me."

"Communication with students, the ability to still connect with them while online."

Pedagogy

Some comments were directed at the freedom and progression teachers experienced with regards to pedagogy. This includes being able to tailor learning, have more freedom in lesson structure, and learning new things and passing on this knowledge.

"We were given the freedom to implement what was best for our class."

"Watching teaching staff grow in confidence delivering online learning."

Communication with parents and community

Similar to the point above, some teachers and staff valued that relationships with families and the community were maintained throughout lockdown through open and friendly communication channels.

"Connections maintained and strengthened during lockdown of teachers / parents, teachers / students."

"Personalised phone calls to families… ease with maintaining our usual timetable but with parents having flexibility of when tasks could be completed."

Accessibility

Similar to the student data, this theme pertains to the access of online learning such as through online platforms.

"Online platform (Hapara) was easy to use and worked really well for the most part."

"Used google classroom and platform which was excellent."

Organisation/coordination

Schools were perceived to be well coordinated and united in engaging in online remote teaching and learning. Some felt that the level of organisation and coordination was facilitative to positive outcomes and experiences.

"Collaboration between faculty members was great. We continued to share and support each other, especially those who had more digital experience and knowledge."

"Senior staff planned constantly and communicated well with school community and staff."

Teacher/staff personal qualities

This theme pertained to the way the lockdown was handled by teachers and staff to adapt and work under pressure and uncertain circumstances. They commented on the resilience shown by staff during this time.

"Being adaptive. My digital learning improved. Teachers worked very hard. Most went the extra mile to engage with students & parents. Most students at least 75% engaged with online learning."

"Staff's ability to change and adapt to online learning with very little warning."

Positive feedback

Some teachers and staff commented on the positive experience and how they enjoyed working from home.

"Everything about working from home was great."

Additional support

Lockdown was an uncertain and turbulent time for those in the education system. Some staff recognised that additional support was offered to schools, students, and families from various sources and organisations to ensure that learning and wellbeing was supported throughout this time.

"Utilising community networks for support when needed."

"RTLB/ Mana Ake continuing working during Lockdown supporting children in need Parents appreciated the way we supported learning through play and through social connections of friendship groups and not overloading children with work."

Lesson planning

Some teachers/staff appreciated the freedom and time they had to plan lessons which met the unique needs of students and which took into account the uncertain times students and families were facing. They also valued having more time to plan and not having to set up classes as well as material which meant they could focus more on content.

> *"I liked not having tight time frames to turn around classes between change over. this was particularly noticeable as I teach a practical subject and setting up ingredients and equipment between lessons can be stressful. Having a break from not having to attend to laundry 3 to 4 times a day was great!!!!"*

> *"Opportunity to create new resources/ standards for internal standards and junior programme-Had lockdown not happened I would not have had that opportunity."*

Learning resources/packs

As with the support received (summarised in Table 28), some teachers/staff reiterated that being provided with learning resources or schools providing resources for students to assist with their learning, was a positive component of the lockdown.

> *"Well prepared with resource packs ready for the children containing exercise books, maths equipment and resources, reading books and copies of all log in codes."*

Device/Internet connection provision

This addresses the issue of accessibility, and that of students through addressing gaps in device and Internet access. They valued that schools and the government could support families to connect to online learning.

> *"Issuing school iPads to students that didn't have home access."*

> *"We issued devices to all our students who did not have any device at home or had to share with the whole family. We delivered many to the students and were assisted by the MOE with a courier to do the majority."*

Table 30 details the aspects of lockdown which were bad or did not go well, as perceived by teachers and staff.

Table 30: Coded themes of things that were bad or did not go well during lockdown for teachers/staff.

Theme	Count
Communication/engagement with students	93
Device/Internet connection provision	48
Workload	40
Difficulty in teaching online	34
Poor/faulty technology and connections	32
Poor support	26
Work environment	18
Lack of PLD/skill building	11
Technology insufficiencies	8
Other	18

Communication/engagement with students

Not all students were well-connected or motivated to participate in online remote learning. Some teachers and staff struggled to open and maintain communication, keep communication channels open, and keep students engaged and participating in their learning.

"Not being able to connect with all students.

"Not all students participating in online meetings, some students did not complete much online work."

Device/Internet connection provision

Teachers/staff recognised the issue of device/Internet access for students.

"Some students had poor Internet connections that made it challenging for them."

"The lowest-achieving students often had the least computer connectivity or parental support, resulting in them falling even further behind peers."

Workload

Some teachers and staff faced increased workload which added undue stress during lockdown. Lots of this was due to juggling multiple students and/or classes and having individualised work for students. Many teachers and staff members are also parents themselves and had to juggle work commitments with their own families.

"Balance of family and work commitments was sometimes challenging with a young child."

"Lots of online marking and spending time sitting at a computer for the majority of the school day."

Difficulty in teaching online

The situation faced by teachers and staff during lockdown was not easy to manage. Some found teaching difficult as the education landscape had completely changed.

"Giving feedback on work was difficult, ensuring accountability for students completing work."

"Difficult to teach parts of the programme."

Poor/faulty technology and connections

Some teachers and staff had issues of their own with technology such as having issues with devices and Internet connections at home. This hindered their ability to work.

"Zoom and google hangout calls could be problematic with noise issues, freezing and time delays."

"Some software that could have helped crashed or required subscription. Slow Internet and crashes at times."

Poor support

Some teachers/staff were disillusioned by the level of support they received for working from home.

"We did not receive any technical support for our community (iPads) as promised. Our teachers worked extremely hard to produce learning, and our families were in the most part not able to access it."

"A promise [to receive] devices and wifi to those that requested it, but this never came to fruition."

Work environment

Some teachers and staff suffered with their home environments not being conducive to work.

"Horrendous at home set up 3x cats and online at the kitchen table is not the best! My power bill was huge as I had to heat my teaching space."

"Massive variation in home life expectations."

Lack of PLD/skill building

Given the abruptness of the lockdown, many teachers would have benefitted from greater learning and support prior to lockdown so that they had the appropriate level of knowledge and ability to engage in effective teaching and learning. There are also safety implications when teachers are unprepared for dealing with online platforms as incidents can occur, and without training, they may not be able to react appropriately.

"I needed to up skill myself pretty fast. Doable but lots of initial work."

"Not enough PD done around video conferencing and online safety as it happened so quickly."

Technology insufficiencies

Some staff were without certain technologies that they needed or supporting technologies (such as printers, keyboards, monitors etc.). This disrupted workflow and made some tasks more difficult and less streamlined.

"Access to video editing software…"

"I needed a printer - couldn't get class work unless it is online."

Table 31 below details the themes which summarise what teachers/staff recommended to improve teaching and learning from home in the future.

Table 31: Coded themes of improvements to make learning from home easier in the future for teachers/staff.

Theme	Count
Device/Internet connectivity	41
PLD/skill building	27
Greater support and guidance	24
Accessibility	16
Communication with parents and community	9
Hard copies	5
Financial help	5
Other	8

Device/Internet connectivity

This addresses the issue of students not having equitable access to devices and Internet connectivity at home to enable them to engage in online learning.

"Give everyone access to the internet so they can stay connected, not just with the school but with their peers and support network."

"Wifi connectivity should be a utility, with all students having equal access to a device and wifi."

PLD/skill building

Professional development may assist teachers and staff cope with online learning in the future by equipping them with what they need to engage in teaching and learning successfully.

"Professional Development around online video conferencing for teachers."

"More professional development and time to develop resources for online teaching."

Greater support and guidance

This theme pertains to general support and guidance from schools/government to enable improved teaching and learning in remote learning situations.

"Procedures, more support from MOE."

Accessibility

Rather than discussing having devices and Internet connectivity, this theme pertains to online platforms and access to online learning.

"Separate Google Classrooms - we had too much information in one place."

"Set up school systems NOW, have students familiar with a common platform. All students to have a google calendar so classes/ year level assessment, meetings can immediately be established."

Communication with parents and community

There needed to be communication with some families around what was occurring and how they could best support schools and their children in engaging in online teaching and learning. They needed ongoing support and communication to be empowered through this process.

"Time to check parents understand what and how to connect."

Hard copies

Being able to send out physical copies of work in the form of pamphlets, booklets, worksheets etc. may help teachers connect with students who have connectivity issues or who struggle with learning online or with devices.

"Ability to send out hard copies of work/ booklets to students."

Financial help

This theme pertains to comments about helping staff, as well as parents and whānau, with financial assistance to be able to cope during lockdown with the additional demands placed on communication etc. It could be seen that staff subsidised the educational system when they used their own telecommunication services. Support could be in the form of providing mobile phone connectivity and credit for phone usage if communication is a barrier.

"Provide staff with cellphones if you expect staff to phone whanau."

"… being able to give people credit to use their phone."

Parent Results

Accessibility

As parents could have multiple children of varying age groups and going to different schools, the wording of the questions regarding accessibility was somewhat different. Whether their children had devices and whether their household had Internet connectivity is shown in Table 32 below. It shows whether all, some, or none of their children had devices, recognising that some but not all may have been digitally equipped prior to lockdown. Percentages are calculated from those who answered the questions.

Table 32: Accessibility of students with devices and Internet prior to lockdown, indicated by parents.

Own device (laptop or tablet)	Count	Percentage
One or more children and each had a device	967	69.8%
More than one child, some but not all had devices	309	22.3%
One or more children, and none had a device	109	7.9%
Internet connectivity at home		
Yes	1355	97.8%
No	30	2.2%

The results indicate that very few families were without Internet, however approximately one third (30.2%) of the sampled parents indicated that not all of their kids were digitally equipped, and 7.9% were completely without student devices.

Table 33 below shows how many parents were asked by their children's schools about their accessibility (out of all parents) and how many were provided with devices (out of those who indicated they were without one or more devices in Table 32). The percentages were calculated from the numbers who did not have a device for every student (418), those who did not have an Internet connection (30), and those who did not have a device for all students as well as no Internet connection (25) for those who answered the question(s).

Table 33: Parents receiving devices or Internet connections for learning in lockdown.

Asked by school about device or Internet	Count	Percentage
Yes	946	85.8%
No	157	14.2%
Provided with device or Internet connection		
Device	124	29.7%
Internet	10	33.3%
Both device and Internet	2	8.0%

Most parents were asked about their device and Internet status. Few received devices or an Internet connection and the results show that of those who were without devices and/or Internet connection, few received what they needed/were missing. Only 8% of the participants without devices for every student and without Internet (2 of the 25 parent participants) received both of these prior to lockdown. For both devices and Internet connections, roughly one third of parents who were without indicated that they received what they needed. Table 34 shows who provided these. Devices were largely distributed by the school. Some Internet providers such as Spark, 2Degrees, and Skinny, sent modems and Internet connections to families.

Table 34: Providers of the 124 student devices and/or 10 Internet connections.

Provider	Count
School	112
Workplace	2
Internet provider	7
Community or government service	4
Family member	2

Table 35 shows how many parents have had to, or will have to, return the devices they were lent or lose the Internet connections they lost. The numbers shown are only from those who indicated they received a device and/or Internet connection (Table 33). Most parents indicated that they have needed to return their devices or anticipate needing to do so soon. This may be due to most devices being borrowed from schools. One fifth indicated that they were going to lose the Internet connection which was provided to them.

Table 35: Number of parents needing to return devices (of the 124 provided) or lose Internet connections (of the 10 provided).

Have had to return or lose	Count	Percentage
Yes, one or more devices	109	87.9%
Yes, Internet connectivity at home	0	0%
Yes, both	0	0%
Will have to return or lose		
Yes, one or more devices	15	12.1%
Yes, Internet connectivity at home	2	20.0%
Yes, both	0	0%

Internet Usage

Parents were asked about what they typically use the Internet for. Table 36 delineates what activities families use the Internet for and what activities they have been able to do that they may not have been able to do in the past due to being provided with devices and Internet.

Table 36: What parents typically use the Internet for and what they've now been enabled to do.

Typical Internet activities	Count
Communication/social media	968
Banking/finance	915
Learning	889
Entertainment	742
Shopping/commerce	705
Work	545
Groceries	267
News and weather	245
Exercise	5
Other	7
What they are now able to do	
Online education	64
Communication	13
No longer needing to share	10
Other	3

Some of the comments listed as 'other' were participants who felt that security online is a concern and did not want to share what they use the Internet for.

Education stood out as the activity most enabled by providing devices and/or Internet connectivity. These were families who were not engaging largely in online learning prior to it becoming a necessity. Communication was another important component of life during lockdown as face-to-face interaction was unable to occur, so people were reliant on email and instant messaging.

Table 37 shows how Internet usage changed as a result of lockdown and learning at home. These are explained in more detail following.

Table 37: How Internet usage changed during lockdown.

Typical Internet activities	Count
Changed communication	366
Online commerce	203
Online education	64
Work arrangements	48
Entertainment	14
Social media	9
Health and fitness	8
Other	3

Changed communication

Under lockdown, communicating could not be done face-to-face thus resulted in communication shifting to online mediums which many did not do so frequently.

"yes, more communicating over the internet."

"During the lockdown, we communicated socially a lot more with people online e.g. using messenger to video call family and friends. This has changed now we are in level 2."

Online commerce

Those who did not frequently engage in online shopping were unable to shop in person for anything that was not essential (such as food or medicine). Some parents found themselves engaging in online commerce more than what they were used to.

"We also buy more things online rather than visiting the shops in person."

"Ordering more things online."

Online education

Education moved to being entirely remote with most working exclusively online. Parents recognised that education was one of the major changes they faced.

"Yes, much more online learning for kids such as sunshine classics, stepsweb and sumdog."

"…extracurricular classes and meetings are now online."

Work arrangements

Many parents were working from home during lockdown and they reported that lockdown forced them to adapt to working primarily online.

"Have had more Zoom meeting for work."

"Like everyone we have used the internet more intensively for everything during lockdown, including work…"

Entertainment

Some parents discussed that they engaged in more online entertainment as a result of lockdown. This includes streaming TV and movies and playing games.

"We have been using the internet for entertainment purposes more extensively since the data cap lift."

"More time spent on social media and Netflix."

Social media

Much like with communication, social lives largely migrated to online environments. One means through which this can be done is social media such as Facebook.

"Yes, more communication over internet (zoom, skype, facebook)."

"Yes, used social media more to communicate."

Health and fitness

With gyms being closed and fitness opportunities being limited, many turned to the Internet to engage with health and fitness such as taking fitness classes and watching video tutorials.

"Fitness classes online."

"Youtube dance lessons."

These themes show that having a device and Internet during lockdown enabled a lot of activities including work, communication, leisure, and health, during a time where such things would be greatly impeded without being digitally connected.

Online Learning Experience

Table 38 shows how many parents needed to work during lockdown. Figure 11 shows how disruptive for these parents their child(ren)'s home education has been. Approximately half of the parents who participated in the survey engaged in work during lockdown. Regarding the level of disruption, the data was not normally distributed as scores are somewhat more evenly distributed. Figure 11 suggests that a majority of parents were not greatly disrupted in their own work by their children's education.

Table 38: Parents working during lockdown.

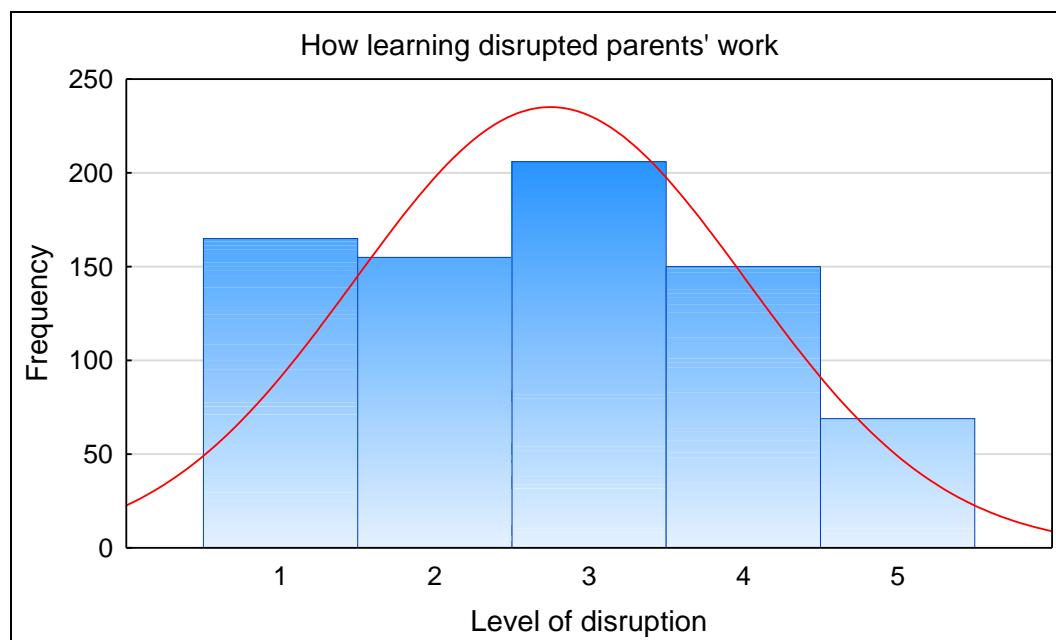| Working during lockdown	Count	Percentage
Yes	857	62.3%
No	518	37.7%

Figure 11: How disruptive parents found their students' learning to their own work.

Parents were also asked how their child's education affected them conducting their own work. The coded themes are shown in Table 39. A brief explanation of the themes follows.

Table 39: Coded themes of how parents were affected by children's education.

Theme	Count
Time away from work to help with learning	407
No change	183
Minimal disruption	54
Internet or device impact	52
Not always available to help with learning	42
Reduced work hours	24
Lost childcare	4
Other	3

Time away from work to help with learning

This theme pertains to parents who needed to often 'leave' work or redirect their attention to help students with their learning. These parents needed to multitask or quickly shift their focus between tasks.

"My son needed some supervision which made it difficult to focus on my work. We both managed to get everything completed."

"Primary school student required much more of my support and input. Spent time every morning setting up a day plan with her, then checking in several times to ensure on track."

Not always available to help with learning

While parents saw a need to help their children with their learning, sometimes they were less able to do so due to work commitments or not knowing how to help.

> *"…there were times when important meetings were unavoidable during the day and learning was put on hold."*

> *"I have less patience/time to help, motivate them."*

Reduced work hours

Helping with education and engaging in remote learning required some parents to disengage from work and reduce their hours to balance roles as an employee and as a home schooling parent. This also affected finance for those working on an hourly basis.

> *"I couldn't work full time. I had to set the morning aside for children's learning and afternoon for my work."*

> *"Yes, I was unable to attend work . No pay as school closures did not get covered."*

Lost childcare

Social distancing has resulted in children not being able to attend childcare facilities, and those who have had to work as essential workers have had to make alternative arrangements.

> *"I am an essential worker and there was no fulltime childcare during the level 4 lockdown(and very limited after that), so I had to pay another household to provide childcare and internet access for my child during this lockdown."*

Internet or device impact

Remote learning has had a large impact on some families who were limited by device(s) and/or Internet connectivity, or a lack thereof. In these situations, some parents therefore felt they had to take education into their own hands.

> *"No online learning was available."*

> *"No, I am studying online so I somewhat neglected my child's school work as I was unable to do some things with only 1 device."*

Many other parents commented that there was very minimal or no disruption to their work as their children engaged in online learning.

Table 40 shows how many parents engaged in home schooling their children, taking a more active role in their learning during lockdown. It also depicts whether there have been other people at home engaging in home schooling.

Table 40: Parents engaging in home schooling during lockdown.

Home schooling children	Count	Percentage
Yes	1284	93.9%
No	83	6.1%
Someone else helping		
Yes	766	62.6%
No	458	37.4%

Very few parents were not engaged in some way in educating their children during lockdown, and approximately two thirds (62.6%) had other people in the home to help with remote learning during lockdown. The people who helped in the teaching and learning are shown in Table 41. The percentages are calculated using the number of parents who indicated they received help (766). Most of the additional help was from the mother/father, likely the parent's spouse.

Table 41: Providers of help home schooling.

Provider of help	Count	Percentage
Mother	128	16.7%
Father	434	56.7%
Other primary caregiver	46	6.0%
Brother or sister	53	6.9%
Auntie or uncle	13	1.7%
Grandparent	34	4.4%
Cousin	1	0.1%
Family friend	2	0.3%
Nanny/live in tutor/au pair	2	0.3%
Other	49	6.4%

Table 42 shows several common aspects of education, and how they were assessed in general by parents in the online remote learning context. Parents were asked to rate how these things went during lockdown from very bad to very good.

Table 42: How parents rated aspects of education during lockdown.

Education aspect	Mean	Standard deviation
How I speak/communicate with my child(ren)'s teacher(s)	3.9	1.01
How I speak/communicate with the school	3.8	1.01
How my child(ren) access their work	4.0	1.03
How my child(ren) complete their work	3.7	1.14
How my child(ren) speak/communicate with others	3.7	1.06
How my child(ren) do their homework	3.6	1.09

The results show that the aspects were all rated similarly. How children access work was viewed the most positively with how they completed homework viewed the most negatively. This may be because homework is viewed as something detached from school, but under lockdown the boundaries of schoolwork and homework may become blurred and arbitrary.

Support was a big component of what made lockdown a positive or negative experience for many. Parents were asked about how well they had been supported by schools. Their perceptions of this support are shown in Figure 12. The figure shows a strong negative skew indicating a trend in that parents largely felt supported by their schools.
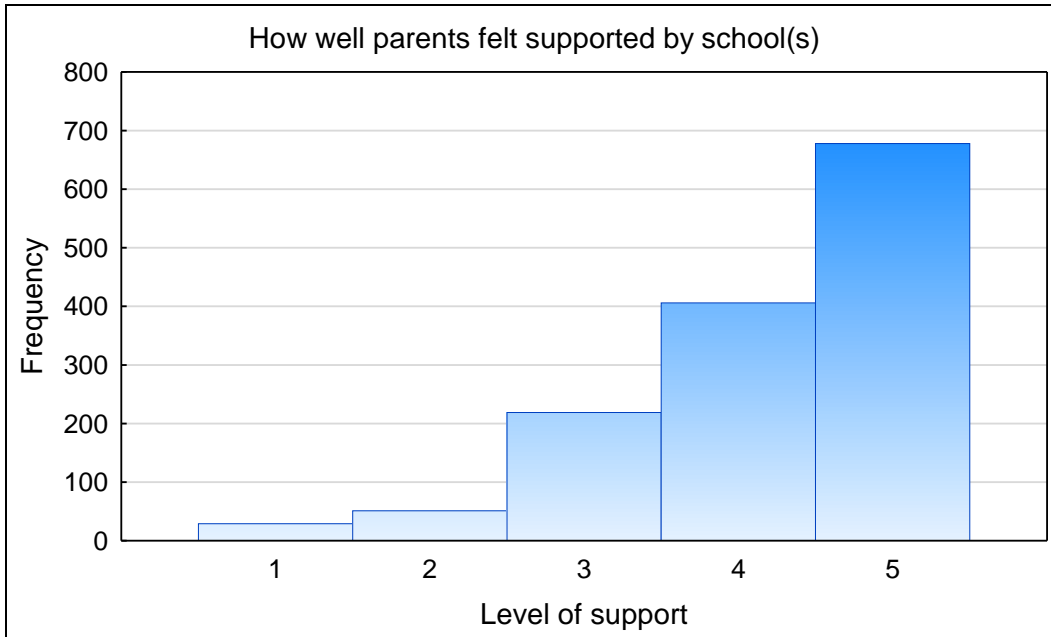
Figure 12: How well parents felt supported by their school(s).

Figure 13 shows to what degree parents perceived their school to meet their individual needs. The figure shows that parents largely felt their individual needs were met well or very well. The individual needs that parents felt schools needed to meet and address were coded thematically and are shown in Table 43.
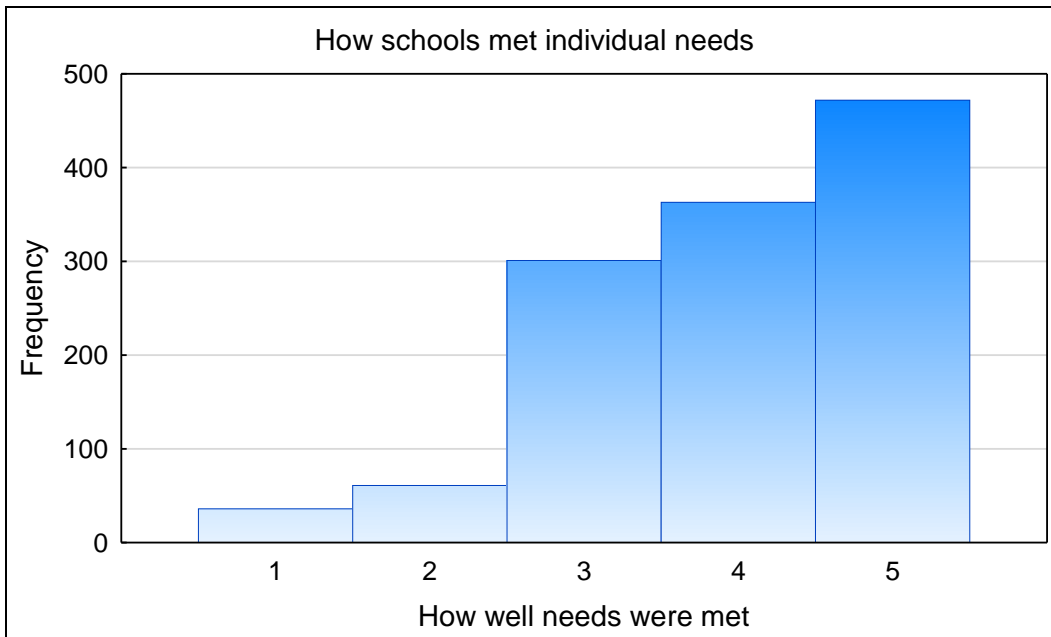

Figure 13: How well parents felt that schools met their individual needs.

Table 43: Coded themes of what individual needs parents need to be met.

Theme	Count
Communicative needs	211
Teacher needs	120
Learning workload and expectation needs	94
Learning resources needs	79
Device and Internet needs	34
"Home schooling" needs	32
Wellbeing needs	16
Teaching staff needs	9
Learning needs support	8
Other	5

Communicative needs

These needs include having open communication channels between schools/teachers and parents and frequent communication.

"Communication is the key in letting students and parents what expectations are, and checking in that they are coping. I think the school has done this really well."

"I would have liked a weekly email from each subject teacher - just one or two sentences saying what topics would be covered in the weeks learning and maybe a couple of website links to help me support that learning."

Teacher needs

Some parents reported that they needed 'teaching' time where students are directly in contact with their teacher and receiving support, or a lesson, or help with schoolwork.

"It was far too difficult to work and home school - I would have preferred more teacher led learning as opposed to tasks being set with requirement of parents assisting - this was for both schools and only because we were not in a position to help as we also had to work from home. It was awfully stressful."

"Schools need to realise they weren't teaching during this time. They were sending an email with a list of tasks to complete and maybe a couple of Zoom meetings a week. The parents had to help and guide the students to complete these tasks. As well as all the other things parents were dealing with, we were expected to be teachers as well. My experience was that teachers took a predominantly hands-off approach."

Learning workload and expectation needs

Some families recognised that students had a lot of expectations placed on them to perform under lockdown and complete a lot of work. Others, however, felt that students were not given enough to do, and that lockdown felt more like a holiday due to there being very low expectations.

"Not expecting the kids to do all this work while we were in lock down…"

"The needs of the different levels of students abilities. Parents and students complained things were too hard and the work was downgraded leaving my children, who are extension students with work that was far too easy and there was no learning in that."

Learning resources needs

Completing tasks and learning activities requires a degree of learning resources. For example, practical activities such as art require resources such as paints. There was also a need of having 'bookwork' made available instead of relying on computer-based work.

"There was a huge art influence whereby paints and other non-regular art supplies were suggested which most families don't have on hand."

"It would be really good to have some bookwork - not just computer work as the kids still need to be practicing writing. I found my own resources, but it would have been good to get them from the school so they were in line with what the kids were learning at the time."

Device and Internet needs

Online remote learning required devices and Internet connectivity, and some families appeared to believe that schools had the responsibility of providing these to enable learning.

"Devices to keep and help with their learning."

"I think all children need devices for school."

"Home schooling" needs

Parents needed support in how to engage effectively with remote learning. This is not only to have strategies, but to be supported and feel capable in engaging in remote learning.

"Ensuring we understand the structure of the school day. Hints and tips with managing the content. Reassurance to parents and children alike that it's all good."

"Parents need reassurance in their efforts to support their children with home learning. We were told all home learning was optional this really good as it took away the pressure of Home Schooling in what was at times an already stressful situation."

Wellbeing needs

This was the need to have wellbeing fostered such as through phone calls.

"Maybe a phone call to check on well-being…"

Teaching staff needs

Some parents expressed that the success of online learning was somewhat reliant on teachers and they needed to be skilled and supported to be upskilled.

"[The school] can provide more support and help to teachers who are not good at using computers. For example, the school can make sure teachers know how to set up a Zoom meeting."

"Mental health was more important than anything."

Learning needs support

Students have different learning needs and some need more learning support than others. Parents felt there needed to be more individualised support which cater to these learning needs.

"If child has learning difficulties aim the work individually not collectively."

"Support for children with learning disabilities (such as appropriate work)."

The aspects of learning during lockdown that were good and went well as perceived by parents are displayed in Table 44.

Table 44: Coded themes of things that were good or went well during lockdown for parents.

Theme	Count
Accessibility	311
Quality learning material	168
Family engagement with education	162
Communication	159
Autonomy/independence	130
Knowledge and skill	88
Organisation/coordination	78
Teacher/staff competence	60
Distraction and concentration	45
Health and wellbeing	34
Family	33
Other	11

Accessibility

As with other demographic groups, parents commented on the accessibility that students had to online learning, online platforms etc. to enable their learning during lockdown when schools were closed.

"Good attention to needs of access."

"A lot of online resources identified by teachers for Children to access and learn at their own time."

Quality learning material

The material provided by schools throughout lockdown was effective to some parents. They commented on the variety, quality, and engagement of materials.

"The applications and programs my children were working on were generally engaging and fun for them to learn using."

"Loved the sunshine learning the work sheets sent out and Google hangouts and communication."

Family engagement with education

Parents appreciated that they were able to have a deeper understanding of education and were more involved in their children's learning.

"We have been able to gauge the level of work our children are doing."

"I have been able to help my kids progress more in their studies. Having one to one is great."

Communication

Some parents commented on the level of communication that was maintained throughout lockdown which they felt was beneficial for students.

"Great communication from teachers/school, zoom class meetings are a great idea so kids can communicate with their school friends."

"Google meet ups with teachers, having face to face contact."

Autonomy/independence

Some parents appreciated the flexibility and self-directed nature of learning under lockdown.

"I saw my children's independency with regards to schoolwork."

"They enjoyed organising their schedule to suit their needs."

Knowledge and skill

This theme is dedicated to the knowledge and skills that children gained throughout lockdown, namely, how to manage themselves and direct attention. Others discussed the specific subjects etc. that their children were excelling in under lockdown.

"Developed better discipline and commitment to their learning. More growth mindset approach rather than compliance driven."

"Older kids have gone well managing their own time and being responsible for completing work on time."

Organisation/coordination

Some parents commented that learning was well-organised and schools were well-coordinated, facilitating learning during this time.

"Structured meeting times. Structured programme of what was to be delivered each day."

"That they got on to giving the work out quite fast."

Teacher/staff competence

Some parents commented on the skill, ability, motivation, and dedication of some of the teachers and staff throughout this process.

> *"His teacher has been excellent, enthusiastic, supportive and fun on zoom. My son looked forward to her classes and did almost all of his online work."*

> *"Some individual teachers have been fantastic with their engagement and communication with students and family."*

Distraction and concentration

Without the distractions of school and peers, some parents noticed that their children were less distracted and more engaged with their learning.

> *"My children were more focused and I was able to split them up into bedrooms when they needed some space to either complete, think or do work without their sibling having their opinion."*

> *"Benefits of having to study at home were a much quieter environment so she could concentrate and focus."*

Health and wellbeing

This is similar to the theme from the student sample. These parents commented on students having improved mental and physical wellbeing while learning from home.

> *"My daughter was much happier at home, as [the school] has quite a bit of bullying at school so meant she didn't have to put up with it."*

> *"They exercised more at home then at school. They felt free in themselves and be themselves instead of following other students etc."*

Family

One positive outcome of lockdown was the amount of time that parents could spend with their children and

> *"Lots of discussions as a family!"*

> *"It was short which gave us lots of family time."*

Table 45 shows what things parents perceived to be bad about lockdown, or things that did not go well.

Table 45: Coded themes of things that were bad or did not go well during lockdown for parents.

Theme	Count
Distraction and concentration	130
Poor contact	128
Accessibility	126
Dependence on family/caregivers	124
Workload	111
Difficulty and confusion	78
Poor communication	70
Too easy/not enough work	59
Organisation/coordination	47
Personal relationships	43
Device dependence	42
Health and wellbeing	27
Work environment	11
Learning/resource packs	7
Other	16

Distraction and concentration

When school and home boundaries are blurred, issues with focus can emerge. Some parents perceived issues with students not engaging with learning due to being unable to shift attention.

> *"Getting children engaged to work.listening to mum (who is not a teacher)."*

> *"Some days were harder than others with regards to distractions and getting motivated."*

Poor contact

This is similar to the need for contact time as some parents perceived there to be very little student-teacher contact.

> *"Not enough contact and support - particularly learning materials like books, worksheets etc."*

> *"Lack of effort from teachers at [school] to set work or help students to complete it."*

Accessibility

Those facing issues of accessibility include those without devices/Internet connections, with faulty or unreliable devices or connections. Such issues impeded learning.

> *"Wifi issues. Many people in house all busy and needing internet access during day."*

> *"Sometimes the internet and platforms used for learning played up eg. The audio would cut out. This was extremely frustrating for the children."*

Dependence on family/caregivers

Many of the tasks assigned was dependent on family involvement and home schooling. For many, this was not feasible due to working during lockdown.

> *"The tasks for younger children required a lot of help from adults. Most of them can't complete any tasks independently."*

> *"Too much requirement of parents being on hand to teach when there were high stress levels of having to work from home."*

Workload

This was a common theme with students also. Parents perceived their children to receive too much work to complete during a time which was already quite stressful.

> *"Large volume of workload on children (perhaps more than would be assigned at school)."*

> *"My daughter had 6 internals over lock down which was huge and very stressful."*

Difficulty and confusion

Education was completely transformed under lockdown, and for many, the new systems and processes under which learning occurred were perceived to be too difficult and confusing.

> *"For our intermediate aged son, work was not laid out in a logical manner. Some tasks were in Hapara, some was set by email. It was quite a challenge for him to work out what was required and what the due dates were. It was also difficult for him to remember how to access all the different programmes using different passwords."*

> *"Confusion for our youngest on what work needed to be done, where to access it and seemed to have too many places to find work to be completed. Was not easy and was not fun, very repetitive."*

Poor communication

Communication was an issue in two ways - either too much or too little. Some parents perceived the amount of communications such as emails to be more than what could feasibly be coped with. Others felt the communication was inadequately scarce.

> *"Not knowing how much work they had or what was expected (they seemed to know though). Whether they completed work assigned or not?"*

> *"Older child was overwhelmed by the amount of emails sent to him."*

Too easy/not enough work

Some parents felt their children was not working enough and their learning was suffering as a result. Some of the assigned work was too easy and this includes students who may have been being held back due to not being set individualised work aligned with their skill and level.

"One school only sent 1 hours worth of work and very simple stuff."

"They expected the children to do 2 hours per day but my son always got through this quickly. I think they should have been given more activities even of these were only optional. Daily calls/zooms would have been good too."

Organisation/coordination

Some parents did not feel that the lockdown was handled well by schools and the government. They believed that things were poorly organised and there was a lack of coordination.

"At times the communication from school (not individual teachers) was tone deaf with comments on how hard it was for teachers - seriously! Unclear what rest of year would look like and what support children may need from home academically."

"Mixed messages from school / teacher / online program about what expectations were in terms of getting through all / some of work posted. Child was on task each day but couldn't get thru all that was posted, which snowballed each week."

Personal relationships

Many students faced social isolation and feelings of loneliness, and parents perceived the lack of personal relationships to be a difficult component of lockdown.

"Total lack of interpersonal contact with friends and peers during enforced lockdown."

"Feeling isolated when not being able to get onto class zoom."

Device dependence

Online remote learning is dependent on the connectivity of students. This means a great reliance on technology than what is expected in typical school settings. Some parents are concerned particularly with screen time.

"I know screen time should be limited but would be better if they got other homework to keep them busy all day just like normal school hours. I noticed that they are now attached to the devices and always wanted more screen time."

"Many of the school assignments were screen-based. It would have been very easy to allow the children to complete all of their assignments on the laptop or tablet, which would have resulted in an unacceptable amount of screen time each day, in our opinion."

Health and wellbeing

The impact on health and wellbeing was on parents' minds as some discussed the emotional and physical toll taken on some students.

"There was a lot of work given and high expectations about how much would be completed. This caused stress and my child became distressed about not finishing work on time. I feel this was unfair during a global pandemic and lacked empathy for children who were worried about what was happening around them and how much their world had changed."

"A little anxiety if they felt unsure of what was expected."

Work environment

This is something schools have little control over, but parents recognised that the environments at home in which students were learning were not facilitative to learning. This includes the noise at home and the comfort of workspaces.

"Also finding suitable space for individuals to work in their own quiet space, 7 people in a 3 bedroom house."

"Lack of working space with at least 4 members of the household trying to do some form of study."

Learning/resource packs

While resources and physical learning packs were viewed quite positively throughout this report, there were issues with these not arriving due to the lockdown.

"Also received the te reo maori education pack just before lockdown lifted."

"I'm sad they didn't get the book pack or device to help them more with work."

Some of these issues are addressed in the feedback on how online learning can be improved in the future. These results are shown in Table 46. These largely reflect what was said by students as well as teachers/staff with some additions to make parents' experiences better.

Table 46: Coded themes of improvements to make learning from home easier in the future for parents.

Theme	Count
Better communication and instruction	159
More teacher contact	93
Better device/technology	88
Paper-based work	56
Better/faster Internet	47
Task suggestions	44
Lighter workload	42
Home schooling tips and resources	31
Personal changes	26
More collaboration	19
Better work environment	18
Flexibility	12
More structure	12
Individualised programmes	10
Safety and security	5
More work	5
Other	20

Better communication and instruction

This addresses issues pertaining to students and parents not knowing what to do or what was required of them for learning during lockdown. In hindsight, having clearer, more consistent communication (without bombarding) would be effective in alleviating stress. This was the most referenced suggestion.

"Keep the communication going with kids and parents. Make sure they have work to do every week."

"I would like to see more video instructions for younger kids' homework, which will be more easier for them to understand and follow."

More teacher contact

As this was an area of concern for some parents, they felt that future online learning could benefit from a higher degree of teacher one-on-one contact.

"More class time online, especially for specific classes. I found it vey hard to work, parent and teach during lockdown."

"More one on one digital check in."

Better devices/technology and better/fast Internet

This theme is reflected throughout this report with participants indicating a need for better connectivity to better engage with learning. This includes through appropriate technologies and fast effective Internet connections. This may require intervention from schools.

"To continue lending or giving devices to help each child to do their school work."

"Yes If we could have new laptop because our laptop is old its always hang up, and updating it was too annoying."

Paper-based work

Those who complained about the dependence on devices and too much screen time felt that more paper-based work would be beneficial. This would help supplement technology-based work with more traditional forms of learning.

"Also, if the youngest child could've had a homework pack of print outs & even reading books that would've been helpful as his age group doesn't typically use devices much."

"Paperwork, books, not just device work."

Task suggestions

This theme was specific to parents who recommended certain tasks and activities and changes to the learning structure (such as time and content) that would make online learning more appropriate. This includes feedback on timing, deadlines, how work is shared, how instructions are given, what tasks should be completed etc.

"I think small bursts of work with shorter deadlines would keep them on their toes more, rather than large assignments with longer deadlines. This would keep them engaged more often rather than putting things off to the last minute."

"The fill in the blank sheets should all be google docs that they can type the answers into and then share with the teacher on line. I ended up copying them into a workbook so that my child would complete them."

Lighter workload

The workload of students was a common complaint of students and parents. They felt that the amount of work was overwhelming and online learning would benefit from quality rather than quantity.

"Reducing the quantity of work expected to be completed at home."

Home schooling tips and resources

Some parents would value being able to play a more active role in their children's education. This could be assisted through providing resources and information to help them be effective facilitators of their child(ren)'s home schooling.

"possibly having a site that parents are able to get support with on how to deliver home learning. having more time to prepare our home learning and feeling ready to be able to help and support my child. being able to accesses resources for my children so that I would be able to help with their daily lessons."

Personal changes

These changes include being able to dedicate themselves timewise to help students and changes to their attitudes and motivation to help students.

"Yeah if I quit full time job, it may work."

"would be easier if we were able to sit with them every time they needed the help unfortunately we had our own work to complete so it wasn't always easy."

More collaboration

This theme is specific to collaboration between students. These parents would value activities which has students working together collaboratively.

"Having the ability for students to collaborate a bit more would probably help with motivation and engagement."

"Maybe a buddy system, for kids to have a classmate to discuss tasks."

Better work environment

This theme reflects those who did not have optimal learning conditions at home, however, is an issue that schools will have little control over.

"A larger house with more desk space would have been useful."

Flexibility

These parents would value greater flexibility in learning so that students can have greater control of what they do depending on their abilities. This also extends to parents who are juggling with work and do not have enough flexibility to engage fully in both work and home schooling.

"For work and school sectors to realize that having to do both is detrimental to both. Provide flexibility of hours for each."

"More realistic time frames for completing work. Not scheduling all meetings in the morning, we had 3 household members in online meetings at the same time."

More structure

Some parents commented on the general structure of learning which needs to be appropriate for different age groups etc.

"A structured learning programme appropriate per year."

"should have been more time structured and more learning assignments given."

Individualised programmes

Parents recognised that much of the learning that occurred was given in bulk to alleviate time issues, however, this resulted in a lack of individualised learning. More individualised programmes of learning were recommended to address individual student learning needs through lockdown.

"If possible more individualized programs/task although I appreciate this would be challenging to achieve."

Safety and security

The safety and security of the Internet is a common concern of parents and how this can be upheld in school and at home when students are learning online using devices was something they would like to see addressed further.

"I have created private google account for my children. This way I can manage screen time and device app via Google Family. I just wish I can manage my children google school account as well. Something to bring up with the School IT."

"Some training on how to teach children to use devices safely (and as adults to set up for online) I needed stayed right with them when using devices as don't have them set up for Internet safety (or know how to)."

More work

Those who felt the workload was too light would value more work, more variety in work, and more complex and challenging work.

"as mentioned above. It was far too lenient and too many decisions were up to the child. Should have been more time structured and more learning assignments given."

Summary and Comparison Between Demographics

Accessibility

The access that students had to remote online learning was something of central importance to this study. The survey sought to understand how many students had access to learning during lockdown or, more specifically, how many were without a computer and/or Internet connection which would inhibit them from engaging in learning and social activities. This was assessed from the perspective of students, teachers and staff who were aware of the data, and from parents.

This report has highlighted the role that the COVID-19 lockdown has played in the digital divide, namely in emphasising the inequalities that currently exist. Learning during lockdown relied on students having their own device such as a laptop or tablet and a stable Internet connection which allowed them to connect to their teacher, to online resources, and to their peers and classmates. If a student was missing these or needed to share, they were disadvantaged during this time.

- 6.1% of students indicated that they did not have access to their own device prior to lockdown.
- Teachers and staff stated a mean percentage of 22.6% who they believed were without a device prior to lockdown.
- 22.3% of parents indicated that some, but not all, of their children had devices, and 7.9% did not have a device for any of their children.
- 1.9% of students indicated they were without an Internet connection at home prior to lockdown.
- 10% of students indicated that they had poor/no Internet which inhibited their ease of access to online learning.
- Teachers and staff gave a mean percentage of 15.4% who they believed were without an Internet connection prior to lockdown.
- 2.2% of parents indicated they were without an Internet connection at home.
- There were no notable differences in the numbers of students indicating they were without devices/Internet connectivity between primary/intermediate and secondary schools.
- Teachers and staff tended to overestimate the number of students without devices and without Internet connectivity when compared to the actual percentages from students and parents.
- Teachers and staff at secondary schools tended to indicate lower percentages of students without devices or Internet connectivity compared to teachers and staff at primary schools.
- Most students with devices (92.8%) have used their device for homework prior to lockdown, thus have used them for learning purposes outside of school time before they were a necessity such as during lockdown.
- The survey was conducted online so may underestimate actual numbers of students without a device and/or Internet to complete the survey in their own time/own space.

Many schools distributed devices to families before lockdown to ensure that students and families had devices to work on. Some also received devices directly from the government, from community groups or agencies, or from family members.

- 71.4% of students who indicated they were without devices received one, thus 28.6% went without during lockdown.
- 30.8% of students who indicated they were without Internet connectivity at home received it, thus 69.2% went without during lockdown.
- 85.8% of parents indicated they were asked by their school about their devices/Internet prior to lockdown.
- 29.7% of parents who indicated they did not have a device for each of their children received one (or more), thus 70.3% were still without devices for every child during lockdown.
- 33.3% of parents who indicated they were without Internet connectivity at home received it, thus 66.7% went without during lockdown.
- 8% of parents indicated they received both.
- The providers of these include schools, parents/caregivers (for students), siblings (for students), other family members, workplaces (for parents), Internet providers, and community/government services.

At the time of taking the survey, school had returned to face-to-face learning. Students and parents were asked about whether they have had to return devices or lose their Internet connection, or whether they know (or anticipate) that they will have to lose these soon.

- Of students who received a device, 40% indicated they have had to return these. None indicated they will need to return them later.
- Of students who received an Internet connection, 25% have lost this connection, and a further 25% anticipate losing this in the near future.
- Of parents who received devices for their children, 87.9% indicated they have had to return these with a further 12.1% anticipating returning these in the near future.
- Of parents who received an Internet connection, 20% anticipate losing this connection in the near future.
- Across both students and parents in the survey, many have not had to lose the devices and Internet connections they have received for learning during lockdown, indicating that some changes have been made to address the digital divide.
- A higher proportion of parents indicated returning (or anticipating returning) devices they were provided with compared to students.

Many teachers and staff needed to migrate to working from home. This required them to be equipped with their own technology and Internet connections to engage with teaching and learning. The accessibility of teachers and staff to technologies and the Internet outside of school was also important to assess for the purpose of ensuring that staff were connected to their schools and students during this critical time.

- On average, teachers and staff rated their schools to be well-equipped with few teachers and staff rating the school as ill-equipped for online learning.
- On average, teachers and staff rated themselves to be well- to very well-equipped for remote learning.

Internet Usage

Another facet of accessibility is what the Internet is used for on a daily basis. Not having a device and/or Internet connection disconnects people from the conveniences that the Internet offers. With so much change occurring during lockdown, device-use and Internet was arguably more important for people to work remotely, connect socially, engage in shopping etc. This report built a case for device and Internet access through highlighting the various everyday activities that they can assist in, especially during lockdown.

- Families engage in a range of activities including learning, communication/social media, work, banking/finance, entertainment, shopping/commerce, grocery shopping, news and weather, and even exercise.
- Parents commented that having access to a device and/or Internet has allowed them engage in online education, communicate better, and have family members be connected without needing to share a device.
- Typical Internet usage changed during lockdown with families engaging more in learning, working remotely, changing how they communicate, how they engage in commerce, how they are entertained, how much they use social media, and how they connect to health and fitness.

Support for Remote Learning

The COVID-19 lockdown was an unprecedented time for schools. The urgency and speed at which schools needed to adapt to online learning resulted in great upheaval.

- Teachers and staff indicated that their schools received a neutral level of support on average.
- The mean levels of support perceived by teachers and staff at primary/intermediate schools and secondary schools were not significantly different, suggesting teachers and staff across sectors perceived similar levels of support.
- Support was received in the form of technology and software support, learning and resource packs, updates and contact with the Ministry, and device and Internet connection distribution.
- Parents felt well to very well supported by their children's schools on average to engage in online learning.
- Parents also felt schools met their individual needs well or very well on average.
- The individual needs they felt that schools needed to meet included communicative needs, teacher needs, learning workload and expectation needs, device and Internet needs, learning resources needs, home schooling needs, wellbeing needs, learning needs support, and teaching staff needs.

Online Learning Experience

While learning can and does occur through online mediums and from a distance, the COVID-19 lockdown resulted in schools across New Zealand having to engage solely in online learning. While some people are more comfortable and proficient with technology, this is not true of everyone.

- Students ranged in how much they typically enjoy working from home on devices, however more students enjoy this kind of learning compared to those who do not.
- There were no statistically significant differences in the levels of enjoyment between primary/intermediate and secondary school students.
- On average, students tend to prefer working on devices compared to traditional forms of learning with books and paper.
- Primary/intermediate students were significantly more likely to prefer device learning over books and paper compared to secondary school students.
- Most students (90.8%) indicated they engaged in conference or video calls with their teachers.
- On average, students and parents felt 'neutral' to 'good' about several aspects of learning during lockdown including communication with teachers, communication with the school(s), how schoolwork is accessed, how schoolwork is completed, communication with classmates, and how they do homework.
- On average, students indicated that their learning progression had no change, or had progressed more, during lockdown. This is in contrast to what would be expected without teachers present.
- Primary/intermediate school students indicated significantly higher levels of progression compared to secondary school students learning at home.
- **Students who had a device prior to lockdown had a higher average level of learning progression than those who did not have a device but were provided with one, and even more than those who did not have a device and were not provided with one. This indicates that being without a device inhibited students during lockdown as they felt they could not progress in their learning compared to those who are digitally equipped.**
- Students who had someone at home to help them with learning progressed in their learning more than those who were without direct help at home.

During lockdown, where possible, businesses were recommended to migrate to remote work to whatever degree possible, and this resulted in many parents needing to work from home in the same environment that their children were learning. Approximately two thirds (62.3%) of the parents in the survey indicated that they worked during lockdown.

Home schooling was something that was recommended by some schools, but this was not feasible for all families as many had multiple children of varying needs and parents who were working from home.

- A majority of students (82.2%) had someone at home to help them with learning. This was mostly from their parents or siblings.
- 93.9% of parents indicated that they helped in home schooling their children.
- Approximately two thirds of the parents (62.6%) had someone else at home to help with home schooling. This was mostly the spouse/partner (mother or father).

Disruption was something that many students and families dealt with while working and learning from home, however, this report study sought to examine whether learning and working from home during lockdown was more or less disruptive than under normal conditions.

- On average, students did not find their home to be disruptive. When comparing to school, however, the results were more evenly spread.
- There were no statistically significant differences in the levels of disruption experienced, or the levels of disruption at home compared to at school, between primary/intermediate students and secondary students.
- Parents did not find the online learning to disrupt their work much on average.
- Student learning affected parental work through parents needing to take themselves away from work to engage in the learning. This had flow on effects to reduced work hours. Having multiple people at home also impacted the Internet and device availability.

The top things that students, teachers/staff, and parents found to be good or go well during lockdown were:

- Independence over learning
- Preferring online learning to traditional learning
- Being less distracted/more concentration
- Communication and engagement
- Pedagogy
- Family engagement with education
- Quality learning material

The top things that students, teachers/staff, and parents found to be bad or not go well during lockdown were:

- Too much distraction/unable to concentrate
- Difficulty/confusion
- Communication and engagement
- Device/Internet provision
- Workload (too much)
- Contact time
- Dependence on family for learning

Several suggestions were made for how to improve online remote learning in the future from students, teachers and staff, and parents. They suggest that all facets of online remote learning can be improved on through clear, open communication, a strong focus on pedagogy and quality teaching, and mix of resources, and improved accessibility addressing gaps where they exist. There are also suggestions to be empathetic toward the context, such as not expecting too much from students and allowing flexibility in making learning work for them. The suggestions include:

- Better devices/technology
- Better/faster Internet
- Better communication and instruction
- More teacher contact

- Lighter workload
- Better work environment
- Paper-based work
- PLD/skill building (for teachers/staff)
- Communication with parents and community
- Greater support and guidance
- Personal financial help
- Task suggestions
- More collaboration
- Greater flexibility
- More structure
- Individualised programmes
- Improved safety and security
- More work
- Home schooling tips and resources

Recommendations

The recommendations are based on the information in this report and thus reflect the data and specific contexts of remote learning under lockdown for schools in the Canterbury region. They are focused on continuing work to bridge the digital divide and ensure that schools, staff/teachers, families and students are equitably equipped to engage in teaching and learning remotely using devices and Internet connectivity.

UNESCO (2020) make 10 recommendations to plan distance learning solutions, and these recommendations are similar to those presented below and aim to address similar issues. Direct comparisons to the recommendations of UNESCO (2020) are to ensure that the recommendations of UNESCO (2020) are considered while keeping true to the data and context presented in this report. The recommendations from UNESCO (2020) are shown in entirety in Appendix A.

1. **Focus collective efforts toward equipping schools digitally**

Schools may be better able to focus resources toward bridging the digital divide by using their resources collectively, such as through Kāhui Ako connections. Where schools can catalogue what they have, what they need, and what resources/funding they have available, this may be utilised to better inform the purchase/lease of digital devices that may be distributed to students/families to engage in online learning. This should also extend to family and community resources.

Access and inclusion are included in the recommendations from UNESCO (2020) in that inclusion in remote learning needs to be prioritised through addressing the gaps in access for those with disabilities or from low-income backgrounds.

2. **Engage with charities/funding bodies/government to secure resources**

As digital technologies are not part of centrally funded infrastructure, schools may need to focus greater attention to funding their digital technologies requirements. This includes engaging more with charities, funding bodies, and the government agencies to secure funding and resources which allow them to equip families with both the devices and Internet connectivity to enable connection and learning from home. This could occur through schools as the distributing organisation, or through some other coordinating mechanism.

3. **Establish initiatives to close the digital divide for the few students still lacking access to a device and/or Internet**

The survey identified that despite efforts across schools and the government to distribute devices and Internet connections, a small proportion of students still lacked these tools and were therefore unable to access online learning due to this digital divide. The proportion represented in this sample may, in fact, be larger as those without access were less able to complete this survey at home or away from school.

Building further on recommendations 1 and 2, it is recommended that ongoing initiatives and funding be provided (potentially through groups such as the GCSN or local Ministry of Education offices) to close the digital divide for these remaining students without devices or Internet connections. Further analysis may also reveal that Māori, Pacific, and other ethnic minorities are disproportionately represented in this group, and education achievements could be raised in targeted segments if digital access inequities are addressed.

4. **Formalise plans for remote learning**

Teaching and learning under lockdown necessitated upheaval to current systems and many found the curriculum to be limited under such conditions. It is recommended that schools plan a strategy for learning remotely and build capability by increasing online and blended learning opportunities. This will help schools adjust to such conditions more readily in the future, should the need strengthen.

Such planning should detail how privacy and data security is upheld across resources and web spaces and have clear guidelines on how information is to be shared during remote learning. UNESCO (2020) stated that the use of applications and platforms should not violate students' data privacy and security. They also state that procedures be in place to monitor student learning, provide feedback, and avoid overloading parents with check student work.

5. **Engage more with online learning tools**

Much of the online learning has been viewed positively, particularly the ease of access. Using resources, apps, and programmes such as those used by teachers and students during lockdown may be helpful additions to the curriculum and assist in adapting to similar remote learning conditions in the future, while also part of a face-to-face programme.

UNESCO (2020) recommend choosing a range of tools and platforms through assessing the digital skills of teachers and students and ensuring that tools are relevant to the needs. They also recommend that appropriate approaches should be blended but the number of applications and platforms needs to be limited. Evidently, in this report there were several complaints of the workload being too high for many.

6. **PLD for teaching staff**

Teachers require the knowledge, skills, and abilities to meaningfully engage with learners and their families digitally. Further PLD should aim to help teachers fully integrate the use of digital technologies into their regular teaching and learning. Taking a proactive approach in developing pedagogy and digital immersion will help teaching and learning to continue from home more seamlessly in the event of another time of school closures.

Teachers empowered through PLD may find such transitions smoother and more effective as they are engaging in learning which occurs in their current practice. Those staff without knowledge or experience in this field found this much more stressful after the lockdown. UNESCO (2020) confirm that training is a necessity for facilitating remote learning using digital technologies.

7. **Create or review policies**

Schools should draft and formalise policies for online and remote learning so that there are governance-level documents which outline how learning under such conditions in the future will occur so everyone is aware of what is expected of them and how incidents (behavioural, safety-related or other) are to be dealt with.

UNESCO (2020) recommend rules be in place and that students are monitored to an extent.

8. **Stronger focus on independence and agency**

One of the most positive features of learning remotely was the independence that students had over their learning and how it was scheduled and completed. Students appreciated

having control over their own learning and this is something that should be implemented more in the future through focusing on opportunities for student agency reaching more students.

9. Recognition of adults and children supporting students

Students learning at home were supported by a range of people including parents, siblings, and peers. Teacher PLD is recommended to include design of support for these facilitators of learning, recognising the change that is necessary for remote learning in homes. Davis, Mackey and Dabner (2018) describe this cultural shift in relation to innovative learning environments and virtual schooling through which these people join the teaching team to facilitate learning.

Parents were often helpers of learning during lockdown, and UNESCO (2020) also recognise that parents need to be supported to engage with digital technologies during remote learning.

10. Enhance online communities

Psychosocial issues, such as feelings of loneliness or isolation, have been issues throughout lockdown as many students have been physically separated from their peers and friends. UNESCO (2020) recommends addressing psychosocial issues through mobilising tools and practices which connect schools, parents, teachers, and students with one another to ensure higher connectivity, human interaction, social caring, and proactively address psychosocial challenges students face while isolated.

They also recommend the creation of remote learning communities which enhance connectivity between teachers, parents, and school managers. This addresses isolation and loneliness while also enabling more seamless sharing of experience and strategies. Online communities are a means through which support can be garnered and distributed to ensure better outcomes for all involved in remote learning.

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Appendix A: The COVID-19 Response Across the World

Evidence from around the world

COVID-19 has had a profound global effect. It has had a large strain on schools around the world and countries are handling their situations differently. In some countries, COVID has resulted in the extreme restrictions due to proliferation of the virus, and for these countries, schools may be remote learning for a long time.

The United Nations Educational, Scientific and Cultural Organisation (UNESCO)

The UNESCO (2020) have developed 10 recommendations for schools operating under lockdown planning distance learning solutions. These are below quoted in their entirely.

1. Examine the readiness and choose the most relevant tools.

Decide on the use high-technology and low-technology solutions based on the reliability of local power supplies, internet connectivity, and digital skills of teachers and students. This could range through integrated digital learning platforms, video lessons, MOOCs, to broadcasting through radios and TVs.

2. Ensure inclusion of the distance learning programmes.

Implement measures to ensure that students including those with disabilities or from low-income backgrounds have access to distance learning programmes, if only a limited number of them have access to digital devices. Consider temporarily decentralizing such devices from computer labs to families and support them with internet connectivity.

3. Protect data privacy and data security.

Assess data security when uploading data or educational resources to web spaces, as well as when sharing them with other organizations or individuals. Ensure that the use of applications and platforms does not violate students' data privacy.

4. Prioritize solutions to address psychosocial challenges before teaching.

Mobilize available tools to connect schools, parents, teachers and students with each other. Create communities to ensure regular human interactions, enable social caring measures, and address possible psychosocial challenges that students may face when they are isolated.

5. Plan the study schedule of the distance learning programmes.

Organize discussions with stakeholders to examine the possible duration of school closures and decide whether the distance learning programme should focus on teaching new knowledge or enhance students' knowledge of prior lessons. Plan the schedule depending on the situation of the affected zones, level of studies, needs of students needs, and availability of parents. Choose the appropriate learning methodologies based on the status of school closures and home-based quarantines. Avoid learning methodologies that require face-to-face communication.

6. Provide support to teachers and parents on the use of digital tools.

Organize brief training or orientation sessions for teachers and parents as well, if monitoring and facilitation are needed. Help teachers to prepare the basic settings such as solutions to the use of internet data if they are required to provide live streaming of lessons.

7. Blend appropriate approaches and limit the number of applications and platforms.

Blend tools or media that are available for most students, both for synchronous communication and lessons, and for asynchronous learning. Avoid overloading students and parents by asking them to download and test too many applications or platforms.

8. Develop distance learning rules and monitor students' learning process.

Define the rules with parents and students on distance learning. Design formative questions, tests, or exercises to monitor closely students' learning process. Try to use tools to support submission of students' feedback and avoid overloading parents by requesting them to scan and send students' feedback.

9. Define the duration of distance learning units based on students' self-regulation skills.

Keep a coherent timing according to the level of the students' self-regulation and metacognitive abilities especially for livestreaming classes. Preferably, the unit for primary school students should not be more than 20 minutes, and no longer than 40 minutes for secondary school students.

10. Create communities and enhance connection.

Create communities of teachers, parents and school managers to address sense of loneliness or helplessness, facilitate sharing of experience and discussion on coping strategies when facing learning difficulties.

Access Programmes

In September 2008, England introduced a home access programme for students aged 5 to 19. The programme was evaluated by the Department for Education (2011) in England. This cost £194 million and accounted for an approximate net increase in home access for 167,000 households, or 2.8% of England's households with dependent children. The programme was viewed positively by stakeholders and welcomed by local authorities. It was successful in reaching a large proportion of beneficiaries and target stakeholders, as well as improving technology and ICT skills, and allowing families greater flexibility in learning from home. There were also reported behavioural and motivational changes which benefitted learners. This project shows a significant commitment from the English government to bridge the digital divide and distribute technologies to vulnerable communities.

On April 22nd 2020, the Minister for Education in Ireland announced a €10 million fund to support the procurement and distribution of technology and devices for disadvantaged students (Marcus-Quinn, 2020). The COVID-19 lockdown has resulted in a myriad of online learning resources for teachers and students at no cost.

The United States of America have conducted research into the nature of the digital divide, surveying 4,917 Americans in April (Vogels, Perrin, Rainie, & Anderson, 2020). 53% of those surveyed state that the Internet has been essential for them personally. 37% believe that schools have a responsibility to provide students with a device to complete work during the COVID-19 pandemic, and 43% believe they have this responsibility but only for students whose families cannot afford it. 21% of those who had school-age children at home say it is very or somewhat likely their children will not be able to complete their work due to not having access to a computer at home, and 22% due to not having reliable Internet at home.

These figures are even higher for lower-income families, urban and rural families, and families of colour. 28% of those with high-speed Internet connections at home worry about

paying for this service, and 30% of smartphone owners worry about paying their cellphone bill. This research highlights the digital divide present in the United States and the need for initiatives to be rolled out which address inequalities.

Some states and districts in the United States have been rushing to find ways to continue education during the pandemic, however the Digital Learning Collaborative (2020) has noted that some districts have banned or restricted teaching remotely, and some lack the infrastructure to engage in remote learning.

In the US, the California government has introduced an initiative to supply more than 70,000 students with laptops, Chromebooks or tablets so they may participate in online learning (Crowley, 2020). This initiative is focused on addressing the 50% of low-income families and 42% of families of colour in California who are worried about distance learning being a barrier to education. Several services/providers have donated devices for this service, including T-Mobile which donated 13,000 tablets, Amazon which donated 10,000 devices, and Apple which donated 9000 iPads.

Internet/Communications Providers

More than 2.5 million Australians are not online and many lack the skills to benefit fully from this connection (Barraket & Wilson, 2020). Ongoing reporting from the Communications Alliance Ltd (2020) has reviewed the roles of telecommunications networks in Australia. These networks have had to deal with substantial increases in demand due to the lockdowns with people working, and students learning, from home. A priority has been working with government to ensure that Australia stays connected. Throughout the lockdown, all providers have had financial hardship assistance available to their customers, and many are offering additional help such as waiving late payment fees, free additional or unlimited data or other features to help families through the crisis.

NBN is an Australian Telco which has provided a $150 million relief and assistance package to connect low-income households with home schooling needs, support emergency and essential services, and assist businesses and residential customers facing financial hardship. Telstra, another Australian Telco, has introduced an initiative to provide 20,000 disadvantaged students and teachers in Australia with free Internet access to support online learning and teaching (Hendry, 2020). 4000 SIM cards for primary and secondary school students to access 4G are being provided by Telstra with a loan of a further 1000 SIM-enabled dongle devices being provided by the Australian government.

In the United States, some districts have parked school buses in parking lots and neighbourhoods to act as public Wi-Fi hotspots so that students may access the Internet for learning. T-Mobile have partnered with Google to provide 100,000 free hotspots largely targeted for rural areas in California state (Crowley, 2020). Verizon is providing 250,000 students with unlimited Internet service at a discounted price in California state (Crowley, 2020). In Dayton, Ohio, Internet provider Spectrum has offered free Internet during school closures (Sweigart, 2020). This is intended for those who do not have Internet at home who require it to engage in online remote learning.

Health Measures

Schools around the world have been engaging in measures which maintain the health of students, staff, and the community through mitigating the spread of the virus (Reuters, 2020). Examples of this include schools in Denmark opening mid-April and spacing out children and engaging in teaching outdoors.

In the Netherlands, there are schools which have installed plastic shields around desks. Schools in New South Wales in Australia have introduced a staggered system whereby students attend school one day per week to reduce the number of students on a given day. Across schools in France, primary school students sat at least one metre apart in small classes with signage to indicate where to safely sit and walk.

Some areas of the world, such as Cyprus and Shanghai, students must have their temperature checked upon entering school (Reuters, 2020). This is to reduce the number of potential positive cases entering the grounds and further spreading the COVID-19 virus.

Appendix B: List of Participant Schools

School	Student count	Teacher/staff count	Parent count
Allenvale School		1	3
Amberley School		1	7
Annabel's Educare		1	
Ao Tawhiti Unlimited Discovery			5
Ashburton Borough School			1
Ashgrove School	17	4	18
Ashley School		4	19
Avonhead School			1
Avonside Girls' High School		1	26
Banks Avenue School		1	12
Beckenham School		13	15
Belfast School	1	1	67
BestStart Parkside		1	
Bloomfields Preschool		1	
Breens Intermediate			4
Bromley School		1	6
Broomfield School			2
Burnside High School			14
Casebrook Intermediate			13
Cashmere High School			16
Catholic Cathedral College		14	3
Chisnallwood Intermediate School	227	12	191
Christ the King School			1
Christchurch Adventist School	3	1	29
Christchurch Boys' High School		2	35
Christchurch East School			2
Christchurch Girls' High School	3	11	37
Christchurch South Intermediate	1		7
Christ's College			2
Clarkville School			2
Clearview Primary School			1
Cobham Intermediate School			3
Cust School			1
Ellesmere College		1	1
Elmwood Normal School	13	4	37
Emmanuel Christian School			1
Fendalton Open Air School		1	1
Ferndale School			1
Fernside School			11
Haeata Community Campus			6
Hagley College			5
Halswell School			3
Hampstead School		1	
Harewood School			1
Heaton Normal Intermediate School	297	27	109
Hillmorton High School			1
Hillview Christian School			1

Ilam School			2
Isleworth School		1	8
John Paul II High School		1	
Just Kids Community Preschool		1	
Kaiapoi Borough School			6
Kaiapoi High School	112	19	124
Kaiapoi North School		2	11
Kidsfirst Kindergarten		1	
Kirkwood Intermediate School			3
Kirwee Model School		1	1
Knights Stream School		1	
Kokatahi-Kowhitirangi School			1
Leithfield School		1	13
Lemonwood Grove School		1	1
Lincoln High School	1	3	16
Lincoln Primary School		12	91
Linwood Avenue School			4
Linwood College		2	8
Loburn School			6
Mairehau High School			5
Mairehau Primary School			7
Marian College		1	6
Marshland School			3
Middleton Grange School			2
Millie's House Early Learning Centre		1	
New Brighton Catholic School		7	3
North Loburn School			1
Ohoka School			5
Our Lady of the Assumption School		4	23
Ouruhia Model School		1	22
Oxford Area School		1	
Papanui High School	3	2	45
Paparoa Street School			12
Parkview Primary School			6
Pegasus Bay School		1	8
Prebbleton School			1
Queenspark School		1	2
Rangi Ruru Girls' School		1	5
Rangiora Borough School		3	12
Rangiora Community College			1
Rangiora High School	128	23	209
Rangiora New Life School			2
Rawhiti School			4
Redwood School		1	3
Riccarton High School			1
Riccarton Primary School		1	
Rolleston Christian School		2	14
Rolleston College			5
Roydvale School	1	1	15
Seabrook McKenzie Centre			4
Sefton School		1	4
Selwyn House School			1
Seven Oaks School		1	

Shirley Boys' High School			42
Shirley Intermediate School			1
Shirley Primary School			4
Somerfield School		1	33
South New Brighton School			4
Southbridge School		1	5
Southbrook School			12
Spreydon School			1
St Albans School		1	13
St Andrew's College		2	12
St Bede's College		1	9
St Francis of Assisi School			1
St James School		4	11
St Joseph's School		1	1
St Margaret's College			4
St Martins School	234	24	147
St Mary School			1
St Michael's Church School			1
St Patrick's School			5
St Peter's School		2	1
St Teresa's School		1	2
St Thomas of Canterbury College			3
Sumner School			1
Swannanoa School		2	8
Tamariki School			4
Te Kura Correspondence School			1
Te Kura Kaupapa Māori o Te Whānau Tahi			2
Te Matauru School			3
Te Pā o Rākaihautū School			1
Te Waka Unua School		1	34
Thorrington Primary School			1
Tuahiwi School		1	2
van Asch Deaf Education Centre		1	
Villa Maria College			8
Waiau School		1	
Waimairi School			8
Wairakei School		1	1
Waitaha School		5	
Waitākiri Primary School			24
Waltham School		1	
Weedons School			1
West Eyreton School			5
West Melton School			1
West Spreydon School		2	
Westburn School		1	6
Wharenui School		2	
Whītau Linwood North School	1	22	108
Wigram Primary School		1	
Woodend School		5	22
Yaldhurst Model School		3	