MINISTRY OF EDUCATION
TE TĀHUHU O TE MĀTAURANGA

Briefing Note: Release of PISA (Programme for International Student Assessment) 2018 national report on digital devices and student outcomes in New Zealand schools.

To:	Hon Jan Tinetti, Associate Minister of Education		
Cc:	Hon Chris Hipkins, Minister of Education		
Date:	13/08/2021	**Priority:**	Medium
Security Level:	In Confidence	**METIS No:**	1264248
Drafter:	Ryan Sutcliffe	**DDI:**	04 463 7512
Key Contact:	David Jagger	**DDI:**	04 463 7693
Messaging seen by Communications team:	Yes	**Round Robin:**	No

Purpose of Report

The purpose of this paper is for you to:

Note that on 27th August the Ministry will publish *"Digital devices and student outcomes in New Zealand schools"* a national report using data from PISA 2018 that examines the relationship between digital device use at school and student achievement (as of 2018). The report was prepared following interest in establishing an evidence base for informing effective digital device use for learning.

Note that a copy of the key messages is attached with this briefing.

Agree that this Briefing be proactively released.

Agree / **Disagree**

Summary

- On 27th August the Ministry will release a research report using New Zealand data from the 2018 Programme for International Student Assessment (PISA) that examines how digital device use at school is linked with student achievement among 15-year-olds.
- There is particular interest in digital devices and learning in the context of the Ministry providing computers and internet connections to students to assist in remote learning post-COVID. This report is *not* about remote learning, but does provide important context about whether devices used at school for the purposes of learning and teaching are linked with academic outcomes. The intention is to inform what good practice with devices looks like. Ultimately this report presents associations at a single

time point between device use and learning outcomes, meaning that we can't say *for certain* whether digital device use itself causes changes in learning outcomes. Nevertheless, to improve confidence we can rule out other factors (such as socioeconomic background) that might account for the relationship.

- The research shows that devices are widely available – and used – in New Zealand schools for teaching and learning, but that *there is an urgent need to identify how they can be optimally used* because there are few situations where devices seem to be enhancing learning, and many in which learning may be hindered. Devices and technology can support learning, but should not be seen as a substitute for quality teaching; knowing how to use devices is key to their effectiveness.
    - Students who used devices at school tended to have poorer academic outcomes, even after accounting for their socioeconomic background. This was particularly the case when devices were used in mathematics lessons.
    - Students had better reading skills when teachers and students used devices in English lessons rountinely each week.
    - Device use was associated with greater interest in technology and unrelated to the English classroom climate, but it may reduce students' enjoyment of reading.
    - Student achievement was no better, and in regard to some questionnaire items was on average worse, in schools that were considered to have adequate capacity to use devices (e.g., sufficient internet speed, professional development for teachers, teachers with necessary technical and pedagogical skills to integrate digital devices in instruction), compared to those that considered themselves underprepared.
- The relevant Ministry teams have been briefed on the potential impacts the findings may have on their work, including those leading the Digital and Data Strategy refresh.

Alexander Brunt
Deputy Secretary
Evidence, Data and Knowledge

13/ 8/ 2021

Hon Jan Tinetti
Associate Minister of Education

17/08/2021

Background

1. The Programme for International Student Assessment (PISA) is an international research programme designed to assess how well education systems around the world prepare their students to meet real-life opportunities and challenges after they finish school. 15-year-olds are assessed in reading, science and mathematics literacy and given a questionnaire for background information. Principals at participating schools also complete a questionnaire for school background information.

2. PISA is designed to provide high quality data to inform education policy and practice. Statistics NZ classifies PISA data as 'Tier 1' statistics, among the most trustworthy and high-value statistics, essential for informing critical decisions. PISA provides valuable indicators of progress towards national goals, such as shaping an education system that delivers excellence, equity and raising child wellbeing.

3. In 2018, almost 6,200 15-year-old students from 194 (English-medium) schools took part in PISA. Schools and students are randomly selected to ensure the sample is representative of the New Zealand 15-year-old population. This research report is focussed only on New Zealand and does not compare our performance to other countries; initial findings including international comparisons from PISA 2018 were released on 2nd December 2019 and were covered in *Briefing note: Release of initial findings from the 2018 cycle of PISA (Programme for International Student Assessment),* [Metis 1208632 refers].

4. This report focusses specifically on device use in New Zealand schools and how it relates to students' performance on the PISA test in reading, mathematics, and science literacy, as well as students' perceptions of their competence and interest in ICT, classroom climate, global mindedness, and enjoyment of reading. It examines the types of devices available at school, time spent using devices in the classroom, and whether they are used only by students, by teachers, or by both. Student outcomes are examined by *how* devices are being used and by whether principals consider their schools to have the capacity for digital integration, including specific policies and programmes around device use.

5. Several suggestions are made based on the findings, framed as *'takeaways for secondary schools'*, on how to approach using devices for instruction and are presented in the Key Findings section below.

Key findings and takeaways

Key findings for New Zealand:

6. Most students had access to devices at school but using most types of devices was negatively associated with PISA scores, even after controlling for student factors. This was particularly the case for tablets and interactive whiteboards.
7. PISA scores were lower for students who used devices during mathematics compared to those who did not use devices. Conversely, the best readers used devices *with their teachers* for more than an hour per week.
8. Device use was associated with greater interest in technology but was unrelated to classroom climate and may even reduce students' enjoyment of reading.
9. Browsing the internet for schoolwork at school stood alone as being positively related to academic outcomes; other learning-related digital activities at school were negatively related.
10. Few principals felt that their teachers had the time, incentives, technical or pedagogical skill to effectively integrate devices into instruction. However, student achievement was no better, on average, in schools where teachers were considered prepared.

Highlighted takeaways for secondary schools:

11. Students should not be left to use devices without teachers also using them.
12. Teachers may use devices themselves for mathematics instruction, but device use by students may be detrimental.
13. There is some evidence of the value of lengthier/more frequent uses in English lessons, implying deeper engagement with reading, writing, or other media, with sufficient teacher guidance.
14. Browsing the internet for schoolwork is a good thing, but devices should purposefully be limited to such schoolwork-related activity.
15. As well as confidence and training, teachers need time to prepare instruction that involves *good practice* in digital device use to lift students' knowledge and skills.

Key Risks and Benefits

16. The findings from PISA data provide a wealth of indicators that contribute to our understanding of what has been working (and not) in the New Zealand education system, which will help inform improvements.
17. The negative relationships between using devices at school and student outcomes highlight the need for the Digital and Data Strategy refresh [Metis 1247020 refers], and for more research to unpack what works and for whom.
18. The COVID-19 lockdowns sparked a deployment of resources to schools and students and investment in learning how to use digital devices effectively. This has the potential, based on the evidence in this research, to both help and to harm learning. The Ministry may be seen as advocating for the use of digital devices regardless of their consequences, particularly with the rollout of digital devices to support remote learning. Indeed, using devices more at school could do that, but: (a) there is real potential for devices to enhance learning, (b) digital learning is better than no learning in the context of remote learning, and (c) developing digital fluency is foundational for

success and further learning in the world. We *should* use devices for learning, but teachers and ākonga should be provided with resources to use them effectively.

Next Steps

19. Q&A and key messages are attached should the Minister be asked to comment.

Proactive Release

20. We recommend that this Briefing is proactively released as per your expectation that information be released as soon as possible. Any information which may need to be withheld will be done so in line with the provisions of the Official Information Act 1982.

Annexes

Annex 1: Q&As and key messages

Annex 2: National report

Annex one: Q&As and key messages