Digital Equity & Education

A NSW CASE STUDY

CENTRE FOR WESTERN SYDNEY

Wester'ly

Whitlam Institute
WITHIN WESTERN SYDNEY UNIVERSITY

Photo by Sally Tsoutas

ACKNOWLEDGEMENT OF COUNTRY

The Whitlam Institute, the Centre for Western Sydney and Wester'ly recognise the Traditional Custodians of the lands on which we work. We pay our respects to Elders past and present. We acknowledge that the teaching, learning, research and advocacy undertaken across our institutions continue the teaching, learning, research and advocacy that has occurred on these lands for tens of thousands of years.

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CONTACT FOR ENQUIRIES

The Whitlam Institute: info@whitlam.org

Centre for Western Sydney: cfws@westernsydney.edu.au

Project
Partners

THE WHITLAM INSTITUTE

The Whitlam Institute within Western Sydney University is a non-partisan dynamic research and policy think tank, prime ministerial archive and public museum. Our mission is to elevate and draw inspiration from the life and work of the Honourable Gough Whitlam AC QC, Australia's 21st Prime Minister. We explore the contemporary relevance of his ideas and pursue the causes he and the Whitlam Government championed. Through robust scholarly studies and research-informed policy development, the Whitlam Institute tackles the challenges of modern Australia, paving the way, in the words of Gough Whitlam, for 'a more equal, open, tolerant and independent Australia'.

CENTRE FOR WESTERN SYDNEY

The Centre for Western Sydney combines world-class research expertise with frank and fearless advocacy on issues of importance to Western Sydney. The Centre's work is guided by its ambition for a thriving Western Sydney that is celebrated for its strengths and contributions regionally, nationally and internationally. Delivered through a strong politics of listening, the Centre aims to drive informed dialogue, action and impact for and with the region.

WESTER'LY

Wester'ly is a grassroots network of community organisations in Western Sydney with a steadfast commitment to combatting and spotlighting the crucial need for digital inclusion. This initiative goes beyond simple connectivity, encompassing access, affordability and the ability to use technology effectively. By knitting together a diverse coalition of community organisations, Wester'ly is dedicated to directly challenging the digital divide, ensuring that all residents of this vibrant area have not only equitable access to digital resources and technology but also the means and knowledge to utilise these tools effectively. Through concerted collaboration and advocacy, Wester'ly is determined to make a real difference in the lives of those it supports, underlining the pivotal role of digital inclusion in driving societal progress and personal development.

ACKNOWLEDGEMENTS

SUPPLIERS

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| Foreword

Distinguished Professor George Williams AO

At Western Sydney University, we are deeply committed to fostering a more inclusive, equitable society - where access to education and opportunity is not hindered by geography, socioeconomic status, or cultural background. In this report on Digital Equity in NSW Schools, researchers from the Whitlam Institute and the University examine one of the most critical issues of our time: digital equity and its profound impact on educational outcomes across NSW.

Digital equity refers to more than access to technology; it is about ensuring that all students, regardless of their circumstances, have the tools and support they need to succeed in an increasingly digital world. As this report reveals, digital inequity not only hinders educational outcomes but also deepens broader socio-economic divides for vulnerable groups in our society. As the findings demonstrate, the COVID-19 pandemic accelerated digital integration in education, and consecutively exposed inequities. Significantly, the report highlights that many students – particularly

those in Western Sydney and regional NSW – are facing ongoing digital barriers in education, ranging from device access, internet connectivity, and the digital literacy among both students and parents required for young people to succeed in their education.

Based on data from over 400 school staff members across NSW, this study highlights the challenges faced by many students, particularly those from lower socio-economic backgrounds, asylum seekers, refugees, students from non-English speaking backgrounds, students with disabilities, and Indigenous students. These students are consistently left behind, despite the best efforts of school leaders and communities to bridge the digital divide during the pandemic. The persistence of digital exclusion, particularly for students from Western Sydney, underscores the urgent need for targeted, place-based responses that ensure digital equity is a reality for all, no matter who they are or where they live.

This report represents a significant step in that direction, offering an evidence-based roadmap for addressing these inequities in schools across the state, and importantly, within the region we serve.

As a university, we recognise the digital divide is not just an issue for schools but also for higher education. At Western Sydney University, we have a responsibility to address these barriers directly. From embedding digital equity in our pathway programs to strengthening student support structures, we will take active steps to ensure all students, particularly those from vulnerable groups, are equipped with the skills, capabilities and resources they need to navigate the challenges of a digital world.

Digital inclusion is not just about today's education, it is about preparing students for tomorrow's opportunities. From education to employment to entrepreneurship and the daily participation of communities in essential services, digital equity is a pillar of an inclusive future. I invite you to engage with the findings of this report and join us in advocating for a more equitable digital future for all students across NSW.

Digital Equity as a Necessity for Equality of Opportunity

Professor Azadeh Dastyari

DIRECTOR, RESEARCH AND POLICY, WHITLAM INSTITUTE

In 1969, Gough Whitlam reminded us that 'we are all diminished when any of us are denied proper education. The nation is the poorer – a poorer economy, a poorer civilisation, because of this human and national waste'. This imperative for a comprehensive and inclusive educational system is as true today as it was then. Education remains the cornerstone of our society and the bedrock upon which we build a prosperous and equitable nation. It is not merely a pathway to individual achievement but a powerful engine for economic growth, social cohesion and national development. Investing in education is investing in the future of our country and our people; it is the most effective tool we have to combat inequality, foster innovation and cultivate a society that values knowledge, critical thinking and civic responsibility. Our commitment to education must be unwavering, for it is through education that we empower our people.

What has changed since Australia's 21st prime minister uttered those eloquent words is the role of technology in education. Gough Whitlam could not have imagined that students would rely on the internet and their devices to do their homework, engage with their educators and learn about the world around them. The COVID-19 pandemic put a spotlight on what many educators already knew: access to technology is critical for modern education, not only in times of crisis but every day, as more and more emphasis is placed on connecting with the world wide web.

This report emerged from an urgent need recognised by community organisations in Western Sydney. They alerted researchers at the Whitlam Institute and the Centre for Western Sydney to stark disparities in access to computers and the internet among primary and high school students, severely limiting educational opportunities for those most vulnerable to digital exclusion. As we delved deeper, we encountered profound concerns from teachers, principals and school staff who witnessed firsthand the detrimental impact of this lack of access on their students. These voices and experiences drove this study, underscoring the critical importance of ensuring that all students can access, afford and safely use technology at home to meet their educational needs. This report also illuminates

the geographical disparities in digital inclusion and the increased risk of exclusion faced by some students.

It is imperative that every student, regardless of background or location, has the necessary tools to succeed.

> As Gough Whitlam wisely recognised, our collective identity is diminished if we fail to provide equitable educational opportunities. In the 21st century, this means ensuring comprehensive digital inclusion for all.

Our future hinges on bridging the digital divide, providing every student with the tools to thrive in an increasingly digital world.

Bridging the Spatial Digital Divide: A Call for Equity in Western Sydney

Dr Rhonda Itaoui

DIRECTOR, CENTRE FOR WESTERN SYDNEY

The digital divide has long affected communities across Australia, yet it remains a pressing issue even in metropolitan areas like Greater Sydney. As the findings of this report highlight, this disparity is felt most acutely in Western Sydney.

School staff across NSW report a growing digital equity gap for Western Sydney's most vulnerable students. In collaboration with the Whitlam Institute and Wester'ly, the Centre for Western Sydney produced this report to highlight the factors limiting digital equity—and, by extension, education—for young people in key communities in NSW.

This report, which draws on insights from educators, school leaders, and community advocates, highlights a troubling reality: despite advances in technology, students from lower socioeconomic backgrounds, Indigenous communities, asylum seeker and refugee families, and other vulnerable groups remain disproportionately affected by digital exclusion. This has direct and lasting consequences for educational outcomes, earning potential, and future opportunities in an increasingly digital world.

The findings on the geography of digital equity emphasise the stark spatial divide between Western Sydney and other regions in terms of access to devices, internet connectivity, and digital literacy. Students in Western Sydney and regional NSW are at a distinct disadvantage in their experience of digital inclusion compared to their counterparts in the rest of Sydney.

While schools made commendable efforts to provide some support during the COVID-19 pandemic, these measures have since been reversed, further widening the gap.

Many students in Western Sydney have no access to internet, no access to an appropriate device for at-home learning, and receive limited support at home to complete their educational activities.

> The effects of digital inequity are not limited to the classroom and education; they will reverberate across our communities, impacting future employment, social inclusion, and wellbeing.

The Centre for Western Sydney stands firm in its commitment to advocating for greater investment in digital infrastructure, education and affordability, particularly in metropolitan areas like Western Sydney where levels of digital exclusion are comparable with regional areas of Australia. We believe that addressing digital equity is not just about providing devices and internet access; it's about ensuring that every student receives a fair share of the tools, skills, and support they need to thrive in an increasingly digital world.

This report serves as both a wake-up call and a roadmap for the future. It is our hope that policymakers, educators, and community leaders will take the actions proposed, and work together to create a more equitable future in a digital world for all students, no matter where they live or who they are.

Executive Summary

CONTEXT

Digital equity, or digital inclusion, refers to fair and equitable access to digital technologies, resources and opportunities for all individuals and communities, regardless of factors such as socioeconomic status, geographic location, age or educational background.

Digital equity is particularly important in the context of education, where unequal access to digital tools and resources can significantly impact students' learning outcomes, engagement and future opportunities.[1] Ensuring digital equity in education helps to bridge the gap between advantaged and disadvantaged students, providing everyone with the same chances to succeed and thrive in a digitally driven world.

Digital inequity has a significant impact on academic achievement, including the chances of attaining higher education qualifications,[2] as well as social inclusion[3] and future employment opportunities.[4] Digital inequity deepens social, cultural and economic divides,[5] reducing access to health or government services and opportunities to learn or to socialise and connect with friends and family.[6]

This report draws on a survey completed by 445 school staff members on digital equity in NSW schools during and after the COVID-19 pandemic.

The findings of the Digital Inclusion in NSW Schools survey presented in this report are examined through three lenses:

1. **Demographically,** focusing on digital equity for six groups recognised as particularly vulnerable to digital exclusion in existing research.[7]

2. **Temporally,** focusing on how digital equity changed before, during and after the NSW COVID-19 lockdowns.

3. **Spatially,** focusing on Western Sydney compared to the rest of Sydney and regional NSW to examine the categories of access, affordability and ability closer through a place-based lens.[8]
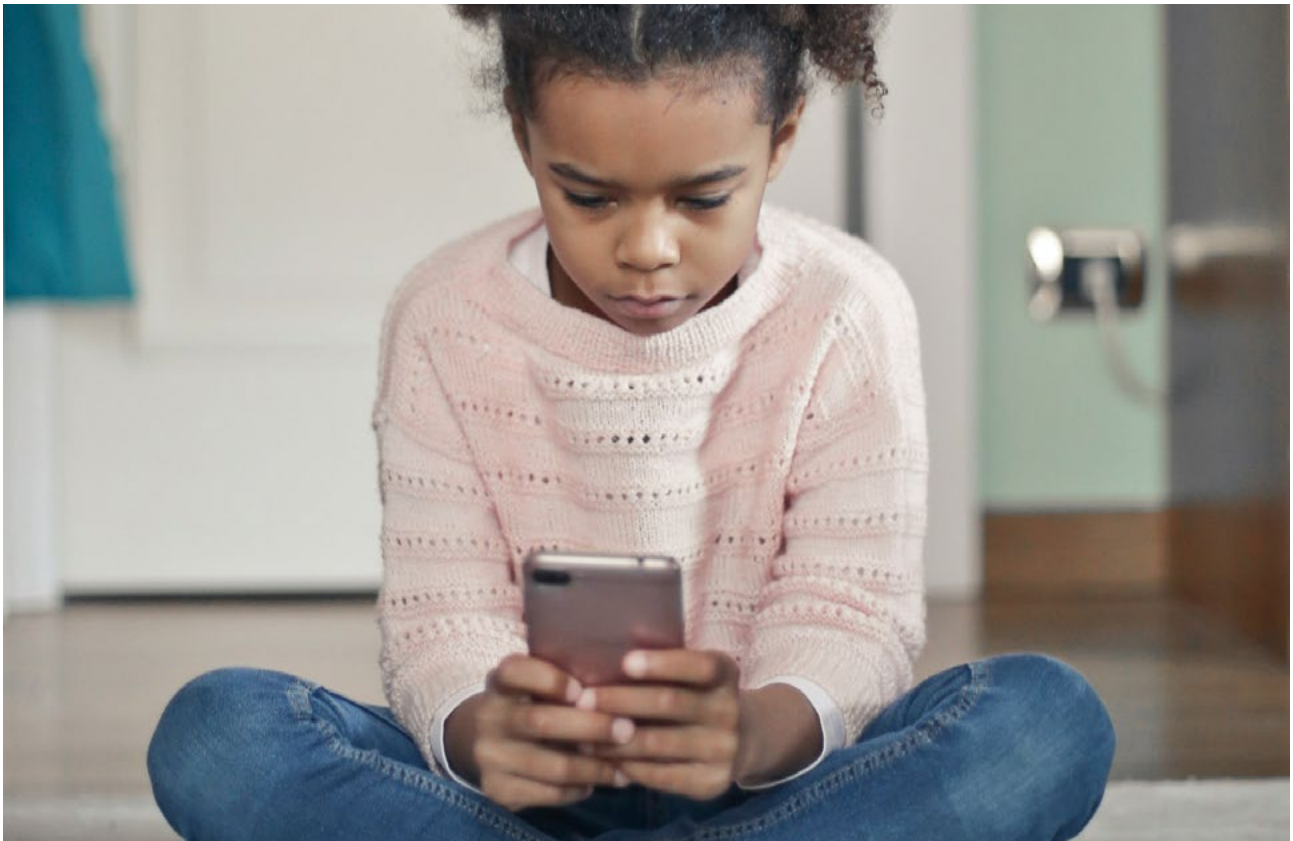
| Key Findings

According to a survey of 445 educators in NSW:

DIGITAL EQUITY AMONG VULNERABLE GROUPS

1. Students from lower socioeconomic backgrounds and asylum seeker/refugee students have the lowest levels of digital inclusion across all metrics - access to devices, internet connectivity and digital literacy.

2. The technology provisions provided by schools for students to take home, such as laptops and dongles, are inadequate to meet the needs of most students from government schools.

THE GEOGRAPHY OF DIGITAL EQUITY

3. Students from Western Sydney and regional NSW have less access to adequate devices and home broadband and are less digitally literate than students from the rest of Sydney.

4. Students from Western Sydney and regional areas of NSW have access to less support when using digital tools than students from the rest of Sydney.

LIMITED KNOWLEDGE OF THE DIGITAL NEEDS OF STUDENTS AT HOME

5. There is a high level of uncertainty among school staff about student access to devices, internet connectivity and digital literacy. This is particularly pronounced for students from asylum seeker/refugee backgrounds.

6. There are differences in understanding between school leaders and classroom teachers regarding student access to devices, internet connectivity and digital literacy at home. School leaders consistently report higher levels of knowledge about device access, internet connectivity and digital literacy compared to classroom teachers.

THE COVID-19 LOCKDOWNS AND DIGITAL EQUITY

7. Although student access to devices, internet connectivity and digital literacy improved during the COVID-19 lockdowns, digital inclusion did not increase equally for all students. Additionally, many of the gains made during the lockdowns have since been lost.

8. Students from lower socioeconomic backgrounds are more digitally excluded now than they were prior to the COVID-19 pandemic.

THE GROWING IMPORTANCE OF DIGITAL EQUITY

9. NSW school staff believe that digital inclusion will become increasingly important for educational outcomes in the future, recognising that the role of technology in student learning at home has already grown since the end of the last lockdown.

10. Despite the heightened recognition among NSW school staff regarding the growing importance of technology, there has not been a corresponding increase in the provision of devices and connectivity for students in NSW schools.

Snapshot

THE DIGITAL EQUITY IN NSW SCHOOLS SURVEY

Between April and June 2023, 445 NSW school staff participated in a survey focused on digital equity. These included teachers, school leaders, principals and support staff.

This report presents their views on students' access to technology at home, affordability of digital tools and levels of digital literacy:

1 Digital Equity Among Vulnerable Groups

Percentage of students from vulnerable groups perceived to be digitally included

28%	30%	19%	34%	36%	34%
STUDENTS FROM LOWER SOCIO-ECONOMIC BACKGROUNDS	INDIGENOUS STUDENTS	ASYLUM SEEKER/ REFUGEE STUDENTS	STUDENTS FROM NON-ENGLISH/ESL BACKGROUNDS	STUDENTS WITH SPECIAL NEEDS	STUDENTS WITH PHYSICAL DISABILITIES
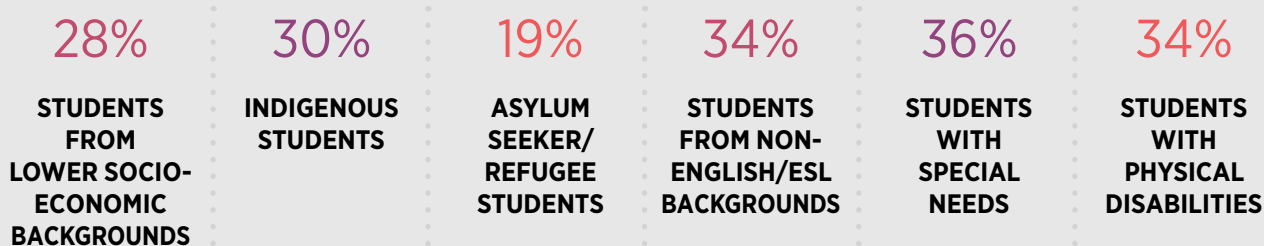
2 Adequacy of school-provided digital provisions (e.g., devices and dongles) for home learning activities

Percentage of staff who believe digital provisions provided by schools are adequate.

GOVERNMENT SCHOOLS VS. NON-GOVERNMENT SCHOOLS

VS.

Government[9]
46%

Non-Government[10]
96%
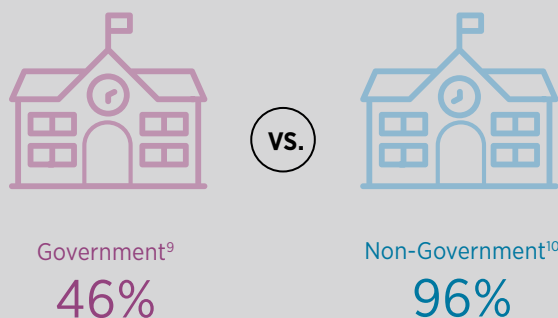
GEOGRAPHICAL DIFFERENCES
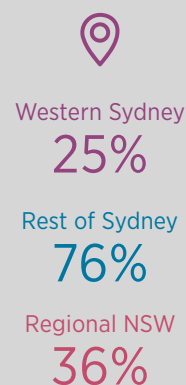
Western Sydney
25%

Rest of Sydney
76%

Regional NSW
36%

LEVELS OF DIGITAL INCLUSION[11] AMONG STUDENTS IN NSW SCHOOLS[12]

Western Sydney	Rest of Sydney	Regional NSW[13]
24%	41%	28%

STUDENTS RECEIVING ADEQUATE TECHNICAL SUPPORT AT HOME

Western Sydney	Rest of Sydney	Regional NSW
10%	24%	5%

LEVELS OF ADEQUATE DIGITAL LITERACY AMONG STUDENTS

Western Sydney	Rest of Sydney	Regional NSW
28%	47%	19%

ACCESS TO ADEQUATE DIGITAL DEVICES FOR LEARNING ACTIVITIES AT HOME

Western Sydney	Rest of Sydney	Regional NSW
32%	59%	39%

ACCESS TO BROADBAND INTERNET AT HOME

Western Sydney	Rest of Sydney	Regional NSW
35%	49%	32%

RELIANCE ON MOBILE PHONES ONLY TO COMPLETE EDUCATIONAL ACTIVITIES AT HOME
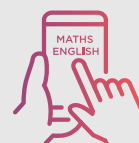
Western Sydney	Rest of Sydney	Regional NSW
37%	17%	25%

(4) Knowledge of digital inclusion among vulnerable students:
School leaders vs. classroom teachers[14]

KNOWLEDGE OF ADEQUACY OF STUDENTS' ACCESS TO DEVICES AT HOME

SCHOOL LEADERS

Don't know
13%

vs.

Know
87%

CLASSROOM TEACHERS

Don't know
25%

vs.
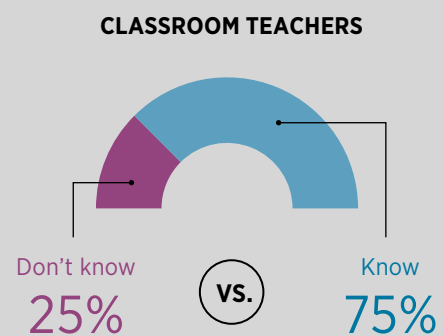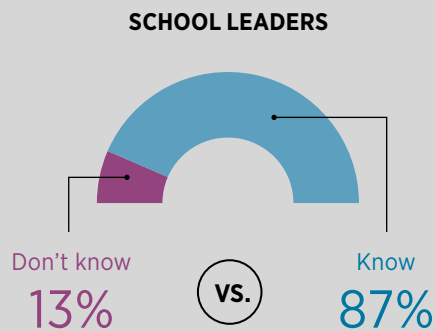
Know
75%

KNOWLEDGE OF STUDENTS' INTERNET CONNECTIVITY AT HOME

SCHOOL LEADERS

Don't know
15%

vs.

Know
85%

CLASSROOM TEACHERS

Don't know
33%

vs.

Know
67%

KNOWLEDGE OF STUDENTS' DIGITAL LITERACY

SCHOOL LEADERS

Don't know
14%

vs.

Know
86%

CLASSROOM TEACHERS

Don't know
28%

vs.
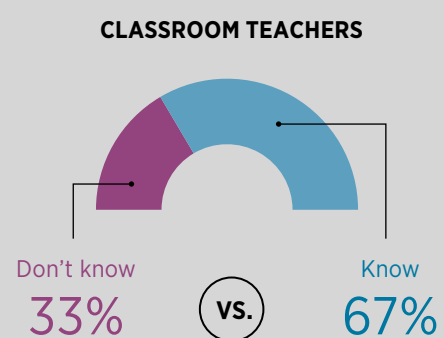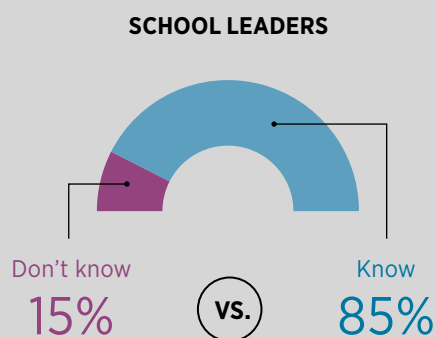
Know
72%
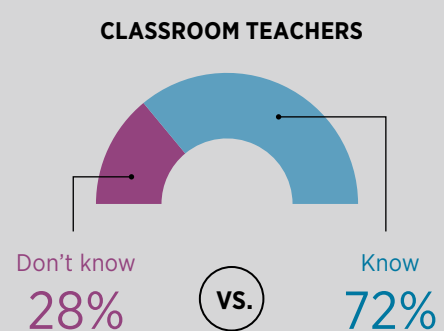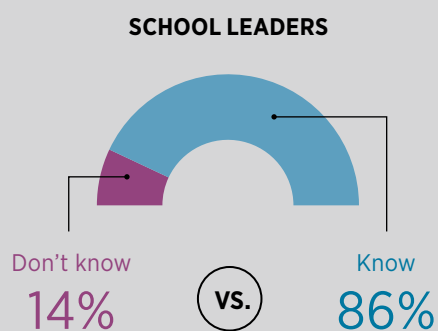
5. Impacts of COVID-19 on perceptions of digital equity for at-home learning

ACCESS TO DIGITAL TECHNOLOGIES FOR LEARNING ACTIVITIES AT HOME:

Before COVID-19 — 47%

During COVID-19 — 52%

After COVID-19 — 39%
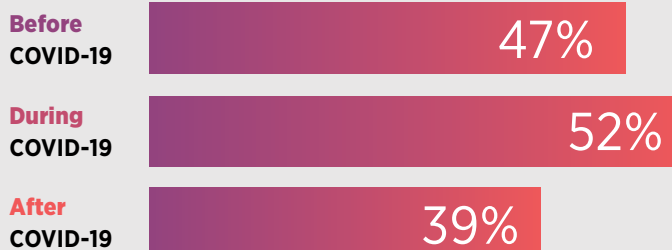
6. Percentage of NSW school staff who foresee the following areas becoming more important for education in the future

ACCESS TO APPROPRIATE DEVICES AT HOME
89%

INTERNET CONNECTIVITY AT HOME
87%

ABILITY TO USE AT-HOME TECHNOLOGY
85%

HOME TECHNOLOGY SUPPORT
87%

Top 5 priority areas to address digital inequity in education

The following key priority areas emerge from the Digital Equity in NSW Schools Survey, literature review and consultations with key stakeholders engaged in advancing digital inclusion in NSW schools.

The findings of this report underscore the importance of prioritising digital equity in education, with a focus on vulnerable groups and geographical considerations – not just on a broader regional scale but also within metropolitan areas.[15]

The barriers faced by students from lower socioeconomic backgrounds and other groups vulnerable to heightened digital exclusion require tailored, place-based initiatives that create equitable opportunities for those most in need, particularly in key areas such as Western Sydney and regional NSW.[16]

Together, these proposed priorities point to the need for greater awareness and knowledge of digital inequities, as well as targeted, place-based policies, programs, digital infrastructure and research to advance digital equity for all students.

1 Do not assume students are digitally included

2 Meet the digital needs of students from lower socioeconomic backgrounds and asylum seeker/refugee students

3 Implement comprehensive and targeted digital literacy programs in schools

4 Invest in digital infrastructure in Western Sydney and regional NSW, where higher levels of digital exclusion are recorded

5 Strengthen digital equity data collection and research

Context

Introduction

Digital access and literacy in primary and secondary education have become a critical component of ensuring equitable opportunities for all students to succeed in a modern, technologically advanced world.[17] While digital literacy is important from early childhood, its significance amplifies during primary and secondary school years as students hone their skills and preparedness for an increasingly digital world.[18]

International research from the Organisation for Economic Co-operation and Development (OECD) has found that students require devices and access to high-speed broadband internet connections at home to adequately participate in learning activities.[19] At-home learning technologies, connectivity and abilities are critical for the continuation of education beyond the classroom and for equitable learning opportunities regardless of location or circumstance. The European Union, for example, has pointed to the need for high-speed internet as a necessity for education both in the classroom and at home.[20] This need has accelerated alongside the increasing integration of technology into daily life.

The impacts of COVID-19 on digital equity

Periods of isolation and quarantine in Australia during the COVID-19 pandemic and the unprecedented shift to distance education[21] drew significant attention to the importance of student access to technology at home. All states and territories had a period of at-home instruction between 2020–2022. Victoria, followed by NSW, had the longest periods in which face-to-face teaching was replaced by distance education. According to the United Nations Children's Fund, as early as May 2020, 86% of young people in Australia said the pandemic response had disrupted or stopped their education entirely.[22]

The disruptive impact of the pandemic, however, was not felt equally by all students.[23] The crisis intensified pre-existing education discrepancies in Australia. It threatened to undo the progress that had been made for many marginalised groups, including refugees,[24] people living in rural or socioeconomically disadvantaged areas,[25] students with a disability,[26] students with special needs,[27] and students who could not rely on parents for effective homeschooling (including where the language spoken at home differed to the language of instruction).[28]

While the educational ramifications of the COVID-19 crisis were unprecedented, it is unlikely it will be the last time students in Australia are forced to rely heavily on at-home learning for their education. Climate change and the increasing risk of natural disasters such as bushfires, the risk of future pandemics, wars and acts of terrorism are examples of potential threats that could result in Australian students returning home for their learning. It is therefore imperative that students are equipped with adequate devices, connectivity and digital abilities to continue their learning online, as well as the necessary technical support needed at home.

Even if students remain in physical classrooms for the foreseeable future, investment in ensuring all children have access to adequate digital connectivity will assist in mitigating the damming impact of educational disadvantage. This is particularly important in an education system that relies increasingly on the assumption that all students have access to sufficient data and devices for learning.

Report scope

This report presents an analysis of digital equity and the educational needs of students in NSW primary and secondary schools.

This report focuses on the access, affordability and digital ability of students at home, providing a place-based emphasis on Western Sydney. In this region, where vulnerable groups, especially those from lower socioeconomic backgrounds,[29] are well represented and the issue of digital equity is particularly pronounced.

The insights are drawn from the perspectives of 445 NSW school staff, over 40% of whom work in schools within the Western Sydney region.

The survey findings address issues of access, affordability and ability. These findings are used in conjunction with relevant data from the Australian Digital Inclusion Index (ADII),[30] the Socio-Economic Indexes for Areas (SEIFA) from the Australian Bureau of Statistics (ABS),[31] and the NSW Digital Connectivity Index.[32] There is strong evidence that certain groups face higher levels of digital exclusion, particularly those from lower socioeconomic backgrounds.[33] Digital inequity is a critical issue for low-income households in Australia, where many must choose between digital technology and other essential needs.[34] For these households, digital inclusion can become a financial burden, jeopardising their ability to afford necessities such as food, rent and healthcare.[35]

Digital exclusion is not, however, confined to lower socioeconomic groups; it also significantly affects what this report terms 'vulnerable' groups rather than 'disadvantaged' ones.[36] Using a human geographical and social justice approach, this report explores how digital disparities impact diverse cohorts. It focuses on six vulnerable groups identified in the literature as having an enhanced vulnerability to digital exclusion:

1. **Students from lower socioeconomic backgrounds**

2. **Indigenous students**

3. **Asylum seeker and refugee students**

4. **Students from non-English speaking or English as a second language (ESL) backgrounds**

5. **Students with special learning needs**

6. **Students with physical disabilities**

The analysis demonstrates that digital inequities further entrench other existing inequities in education, particularly among certain groups of students. These inequities must be addressed through targeted interventions and policy reforms aimed at ensuring all students have equitable access to digital resources, training and support, thereby levelling the educational playing field and fostering inclusive learning outcomes.

Report outline

The report is structured into two key sections:

1. **Context: The role of digital equity in education**

   This section defines digital equity within the current research landscape, summarises the role of digital equity in school education, defines the vulnerable student groups and provides a brief overview of current policies and student numbers in NSW.

2. **Findings: The Digital Equity in NSW Schools Survey**

   This section outlines the methodology of the survey. It then presents the findings, which centre around digital inclusion for vulnerable groups, changes during the COVID-19 pandemic and the current state of digital equity in NSW and Western Sydney.

Defining digital equity

In this report, the term 'digital equity' means fair and equal access to digital technologies, resources and opportunities for everyone, including the ability to use technology safely, regardless of who you are and where you live.

The term is synonymous with the phrase 'digital inclusion' as used by the ADII.[37] The ADII measures the extent of digital inclusion across the Australian population by assessing people's access to technology, their ability to afford this technology and their digital ability. The ADII is based on the premise that everyone should be able to make full use of digital technologies and the benefits they bring while avoiding their potential negative consequences.[38] Other related terms used by governments and researchers include 'digital exclusion', 'digital poverty' and digital divides.[39]

The term digital equity is adopted in this study to reflect a focus on investigating how digital access, affordability and ability intersect with existing inequities faced in education settings by different geographic areas and vulnerable groups.

Over the past decade, the pace of digitisation has accelerated markedly, a trend that the COVID-19 pandemic has further catalysed.[40] Digital access is increasingly recognised as a core element of social inclusion[41] because of the increasing role of technology as a gateway to many daily activities and essential services.[42] However, in Australia, there continues to be a digital divide, where members of some groups continue to score lower in terms of digital inclusion than the general population.[43]

Digital equity aims to ensure that everyone has the necessary tools and skills to participate fully in the digital age.[44]

How digital equity is measured

There is a growing body of literature that recognises that there is no 'one' divide that separates the digitally included from the digitally excluded. Still, there are complex layers of exclusion that determine what technological infrastructures, devices, training and support are available to people in diverse geographies and from diverse backgrounds.[45] It is not enough to treat access to digital resources in isolation – social inequities must be tackled in conjunction with digital ones in order to prevent all inequities from deepening.[46]

THREE KEY AREAS TO CONSIDER FOR A DIGITALLY INCLUSIVE AND EQUITABLE SOCIETY:[47]

1 **ACCESSIBILITY**

Ensuring equitable access to devices like computers, laptops, tablets and smartphones, as well as providing high-quality and dependable internet connectivity.

2 **AFFORDABILITY**

The costs of digital devices and fast and reliable internet services.

3 **ABILITY**

The necessary digital skills and confidence to utilise digital resources effectively. Often termed digital literacy, this includes basic and advanced operational skills, navigation and social and creative engagement with digital technology. Digital ability also involves the capacity to harness digital resources and convert them into tangible social benefits.[48]

The ADII measures digital inclusion using a scoring system that ranges from 0 to 100.[49] Higher scores signify a more substantial degree of digital inclusion. Despite digital inclusion advancing nationally over recent years, 9.4% of the Australian population remained highly excluded, registering an index score of 45 or below in the 2023 ADII report. The disparities between the highest and lowest income brackets have widened - a gap that has grown in the past three years. This is primarily driven by affordability barriers, whereby individuals from lower socioeconomic backgrounds often struggle with the costs associated with acquiring and maintaining digital devices and internet services.[50]

Groups facing additional barriers to digital inclusion

Digital inequity both reflects and perpetuates existing social disparities.[51] Access to digital resources, including devices, internet connectivity, and digital skills, often intersects with other inequities to further entrench inequities and disadvantages. Existing research identifies six vulnerable groups as facing extra barriers to digital inclusion.[52]

Vulnerable groups facing higher levels of digital exclusion:

1 STUDENTS FROM LOW SOCIOECONOMIC BACKGROUNDS

› In 2021, it was estimated that 995,600 people in NSW were living below the poverty line, including 229,200 children under the age of 15.[53]

› Between 2020 and 2021, around 1 in 5 students in low socioeconomic status (SES)[54] areas in Australia reported that they did not have a laptop or computer at home, compared to only 1 in 250 students in high SES areas while undertaking distance learning.[55]

› Students without internet and/ or computer access have fallen further behind their more privileged peers since the onset of the pandemic and will likely continue to do so.[56]

2 INDIGENOUS STUDENTS

› There are 71,378 Indigenous students in NSW, making up 8% of all students.[57]

› Indigenous peoples in Australia (including students) record 7.5 points behind the national average in digital inclusion, with an access gap of 8.2 points, a 4.3-point gap in digital ability and a 6.1 gap in affordability across the ADII.[58]

› Noting the recorded gaps and a growing body of research on Indigenous digital equity in Australia,[59] there is little specifically on Indigenous students at the primary and secondary school levels. There is a further limited understanding of Indigenous digital equity in urban and suburban settings.[60]

3 STUDENTS FROM REFUGEE BACKGROUNDS

› There are currently 11,000 students from refugee backgrounds in NSW schools, with approximately 1,800 enrolling each year.[61]

› Digital access is notably lower for newly arrived migrants with refugee backgrounds compared to international students and more established migrants.[62]

› COVID-19 lockdowns resulted in profound levels of learning loss among students from refugee backgrounds, with students struggling without the extra support of in-classroom teachers and support services.[63] Economic inequalities further impacted digital access for young people from refugee backgrounds in Victoria.[64]

4 STUDENTS FROM NON-ENGLISH SPEAKING BACKGROUNDS

› 77% of students in NSW use English at home, and 24% use a language other than English at home.[65]

› These numbers are higher in urban settings, such as Western Sydney, where 41% of students (primary + secondary) speak a language other than English at home.[66]

› Digital educational platforms, instructions and resources are often presented in English. For students who are proficient in the language, parents or other at-home support may face language barriers that limit the support received by students at home when engaging with digital platforms.[67]

5 STUDENTS WITH SPECIAL LEARNING NEEDS

› There are 46,496 students in NSW (4% of the entire student cohort) who 'need assistance with core activities',[68] but not all students with special learning needs require assistance for core activities.

› Students with special learning needs have specific challenges with digital inclusion. Educational software and applications that are not flexible enough to meet the diverse needs of students with special learning needs can be more of a hindrance than a help.[69]

› Young people with intellectual disabilities often rely on online communities for support, and digital technologies can play a crucial role in their education, social engagement and entertainment.[70]

6 STUDENTS WITH PHYSICAL DISABILITIES

› One in five school students (more than 183,000) are learning with a disability in NSW.[71] This includes both physical and other disabilities, including those that may fall under the category above of students with special learning needs.[72]

› Digital inequity remains high for people with disabilities in Australia, with the ADII reporting that 25% of people with a disability are regarded as highly digitally excluded.[73]

› Several interlinking factors contribute to digital exclusion for people with disabilities, including lack of internet access, the high cost of assistive technology, digital ability and socioeconomic factors.[74]

Digital equity and education

Over the last two decades, the use of technology has rapidly increased in the teaching and learning of students.

Digital inclusion profoundly influences learning outcomes, future employment prospects and social integration.[75] Inadequate digital access and abilities in the schooling years diminish the likelihood of attaining higher education, securing quality employment and participating effectively in various social and civic activities.[76] A growing body of literature argues that digital inequity often mirrors social inequities, acting as both a reflection and perpetuator of existing disparities.[77]

Drawing on both the ADII-identified digital inclusion measures of access, affordability and ability, along with research in the digital equity and education space, four key factors have been identified as necessary for digital inclusion in primary and secondary education:

1. Access to appropriate devices for learning, such as desktop computers and laptops[78]

2. A fast and reliable internet connection with adequate data[79]

3. Digital literacy skills that allow students to learn and participate in the classroom and beyond safely[80]

4. Access to people who have digital literacy skills to provide students with technical support.[81]

Despite common misconceptions that young people are automatically 'digital natives' because they have grown up in a digitally mediated era,[82] research has shown profound inequities that affect digital access, affordability and ability for today's school-aged children and young people.[83] The utilisation of technology by young people is influenced by various resources or capital, encompassing financial, social and cultural factors.[84] Being able to access digital resources, like computers and broadband internet, and having the skills to use these resources in safe and constructive ways is critical for students participating in civil and social life post-secondary school studies.[85]

CONSEQUENCES OF DIGITAL INEQUITY IN EDUCATION

The increasing digitisation of educational and other resources is commonly viewed positively – digital environments can be more accessible and flexible, allow for streamlining, connecting those separated by distance or circumstance and provide a world for innovative and ground-breaking new ways of learning.[86]

However, if attention is not paid to the geographic, economic and physical aspects of digital inequity, then simply increasing digital resources without thinking about the diverse needs of student cohorts potentially exacerbates systemic inequities in digital education.[87]

Digital inequities have concrete consequences.[88] They serve to entrench other forms of inequity and create digital divides between those with the opportunities and abilities to access and engage with digital technologies and those without.[89]

This is particularly critical in NSW schools where there are distinct jurisdictional divisions between education and communications, which present unique challenges for developing and implementing comprehensive digital inclusion policies.[90]

Digital equity in NSW schools' survey

Participant profiles

The Digital Equity in NSW Schools Survey received 445 responses from NSW school staff. These included classroom teachers, school leaders and government and non-government school educators working in primary and high schools across Western Sydney, the rest of Sydney and regional NSW.[91]

The highest proportion of these were classroom teachers (38%) working in Western Sydney (42%) and in government (72%) schools at the secondary level (43.1%) (see Figures 1.1–1.4).

Figure 1. Demographics of survey respondents
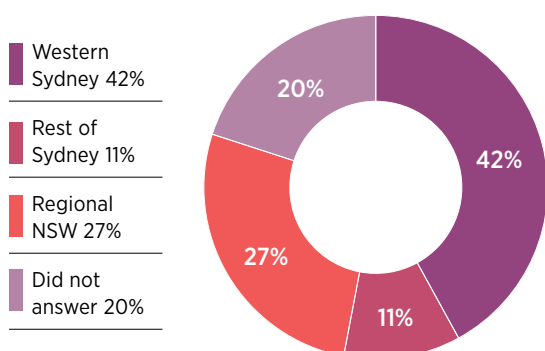
Figure 1.1 School location

Western Sydney 42%
Rest of Sydney 11%
Regional NSW 27%
Did not answer 20%

Figure 1.2 School type: primary or secondary

Secondary schools 43%
Primary schools 27%
Did not answer 21%
Other 9%[92]
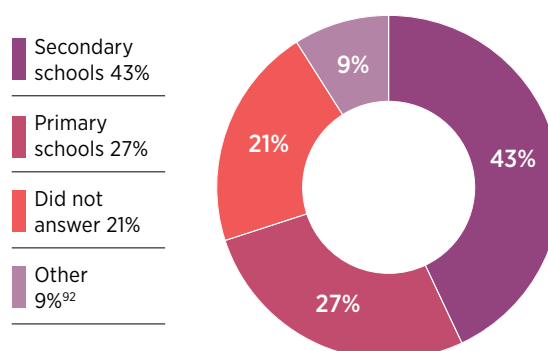
Figure 1.3 School type: government or non-government

Government schools 72%
Non-government schools 7%[93]
Did not answer 21%

Figure 1.4 Role within the school

Classroom teachers 38%
School leaders 25%
Did not answer 21%
Other 16% (including more than one type of role)[94]
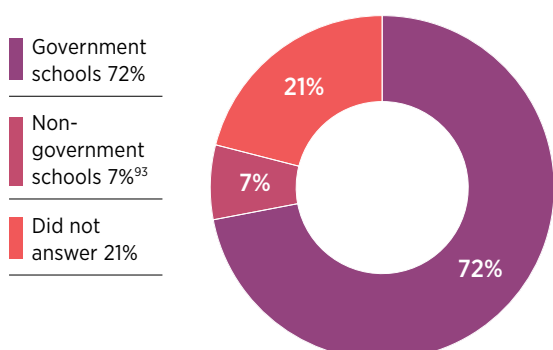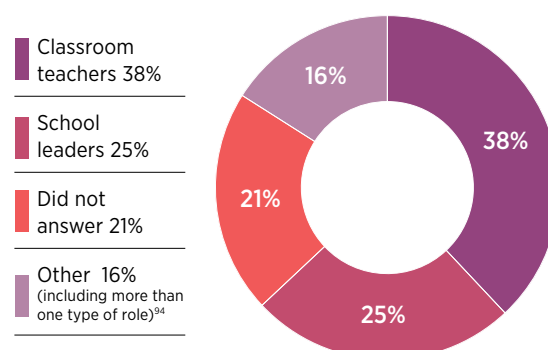
Data analysis

The data was analysed using several primary approaches, including geographical and temporal. This allowed the researchers to examine how perceptions of digital inclusion compared across different geographical areas, as well as the distinct periods before, during and after the COVID-19 lockdowns in NSW.

SPATIAL: THE ROLE OF GEOGRAPHY IN DIGITAL EQUITY

Geographical location significantly shapes levels of digital inclusion and equity, influencing access to resources and opportunities in distinct ways.[95] A place-based approach is vital in understanding the intersecting impact of geography on digital access and how digital exclusion may further entrench place-based disadvantage.[96] With a significant proportion of respondents employed in schools in Western Sydney, a detailed analysis of how respondents perceive their student's digital inclusion across three key geographical areas is presented: Western Sydney, the rest of Sydney and the rest of NSW.

Some data points are examined across various local government areas (LGAs) within Western Sydney to explore spatial variations and nuances of digital inequity within metropolitan regions and identify pockets of digital equity and inequity.[97]

## TEMPORAL: THE IMPACTS OF THE COVID-19 LOCKDOWNS

This research is also interested in longitudinal variations, comparing digital inclusion levels across three periods before COVID-19, during the period when COVID-19 isolation measures were prevalent and after the major COVID-19-related NSW lockdowns. These temporal variations are analysed in response to several digital equity initiatives introduced during the pandemic that provided digital resources to students. By tracking trends in digital access across these periods, the study explores the impact of the lockdowns on the awareness of classroom teachers and school leaders around digital equity, as well as the efficacy of provisions in advancing digital equity.

STAKEHOLDER CONSULTATIONS

This research was developed in consultation with members of organisations and agencies from Wester'ly, the coalition of service providers, councils and community members concerned with digital inclusion measures in Western Sydney from 2020–2024. In addition, a select group of stakeholders outside of Wester'ly were also invited to workshop the preliminary findings of the survey in November 2023. There were 12 attendees, including representatives from the NSW Department of Education, Catholic school leadership, the communications industry, community, charity and advocacy groups and researchers, who provided input on data interpretation, as well as the key recommendations proposed in this study. This process enhanced the relevance of the findings, as well as the proposed priorities to the practice and work of the key stakeholders in relation to digital equity.[98]
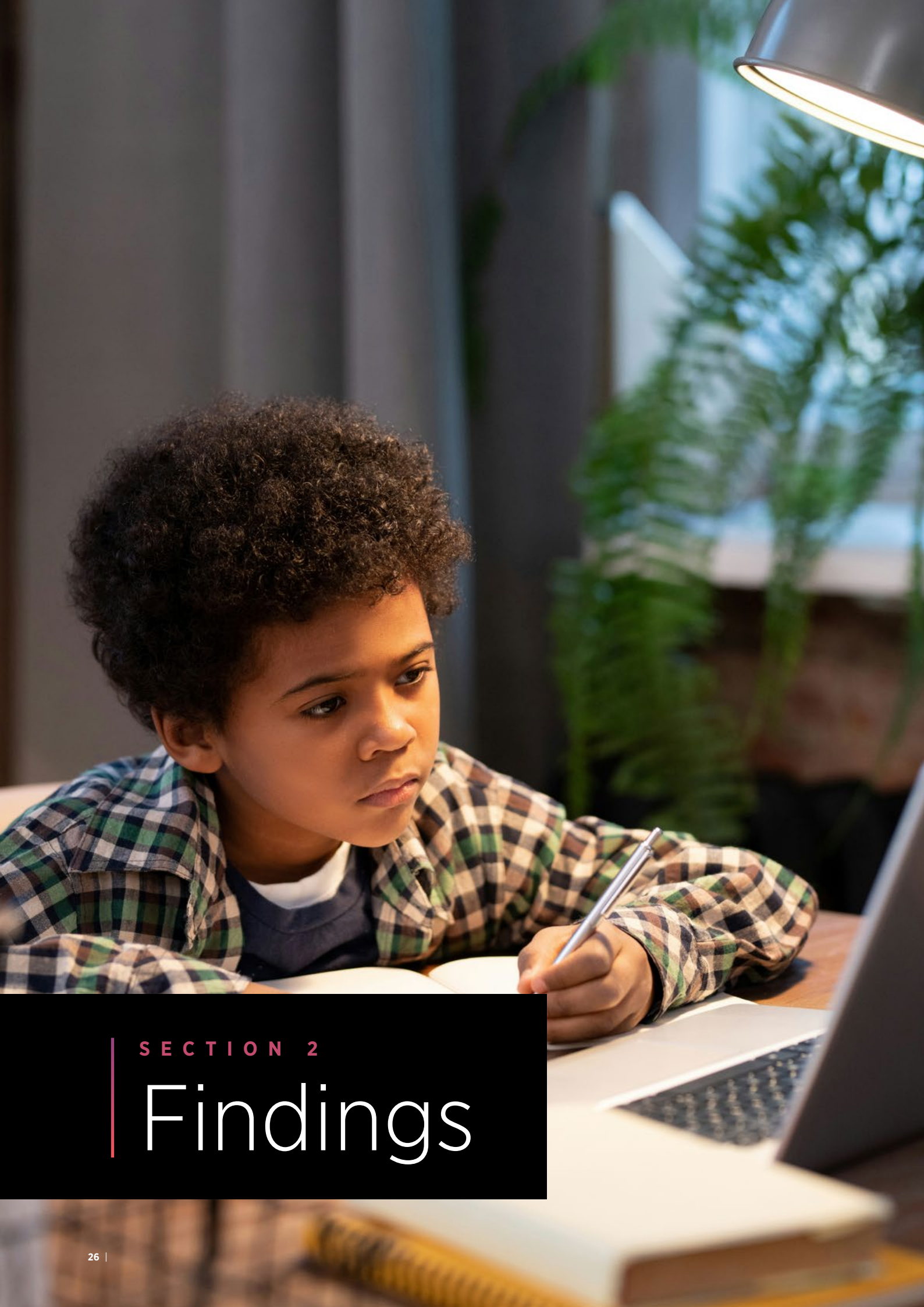
Findings

Digital equity among vulnerable groups

Digital equity among vulnerable groups is a pressing issue that impacts educational outcomes and future opportunities. Access to devices, reliable internet connectivity and adequate digital literacy skills are fundamental to ensuring that all students can participate fully in their education. However, significant disparities exist among different student groups, with those from lower socioeconomic backgrounds, Indigenous students, students who are asylum seekers or refugees, students with special needs and students with disabilities facing the most substantial challenges. These disparities highlight the urgent need for targeted interventions to bridge the digital divide. This section examines the current state of digital equity among these vulnerable groups, identifying key areas for improvement.

ACCESS TO DEVICES AMONG VULNERABLE GROUPS

Figure 2 illustrates the perceived levels of adequate access to devices among different vulnerable student groups, revealing significant disparities.

Figure 2. Perceived adequacy of access to devices among vulnerable students (% of respondents)
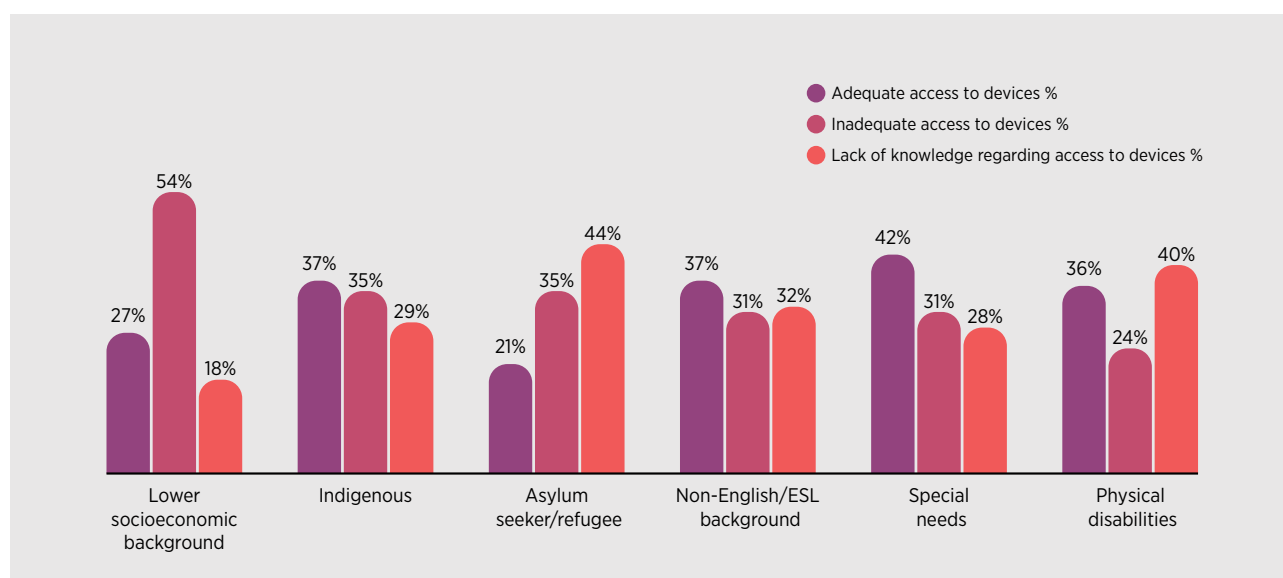
School leaders and classroom teachers perceive students from lower SES backgrounds as being the most disadvantaged in their access to devices, with only 27% of respondents believing they have adequate access. In comparison, more than half of teachers (54%) believe students from lower socioeconomic backgrounds do not have adequate access. Asylum seeker/refugee students are also perceived as highly disadvantaged with access to devices, with 21% of respondents indicating they had adequate access to devices and 35% indicating they had inadequate access. The level of uncertainty among school staff regarding the adequacy of access to devices is highest for asylum seeker/refugee students (44%).

Indigenous students and students from non-English/ESL backgrounds fare slightly better in their access to devices. Still, access to devices among these two groups remains a concern, with only 37% of respondents believing Indigenous students to have adequate access to devices and only 37% of respondents believing students from non-English/ESL backgrounds have adequate access to devices. Similarly, 36% of respondents perceived students with disabilities to have adequate access, while 24% identified inadequate access. Lack of knowledge regarding the access of students with a physical disability was also high at 40%.

Students with special needs are viewed to have the highest level of access to devices, with 42% of respondents perceiving this cohort to have adequate access and 31% indicating inadequate access among this cohort.

Figure 3 provides insights into the perceived levels of knowledge among school staff regarding the adequacy of device access for vulnerable students. The data highlights a disparity between different groups of staff, suggesting areas for improvement in communication and information dissemination.

School leaders reported the highest levels of knowledge about device access, with 87% indicating they were informed, while only 13% expressed a lack of knowledge. This suggests that school leaders, who are often involved in decision-making processes and have better access to information, are more aware of the state of device access among vulnerable students. Classroom teachers, on the other hand, showed a higher level of uncertainty, with 25% indicating a lack of knowledge and 75% feeling informed.

Figure 3. Awareness of device access among vulnerable students, teachers vs. school leaders[99]
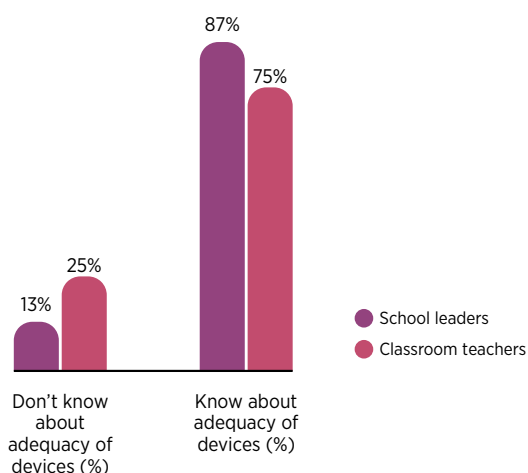
ADEQUATE INTERNET CONNECTIVITY AMONG VULNERABLE GROUPS

Figure 4. Perceived adequacy of internet connectivity among vulnerable students (% of respondents)
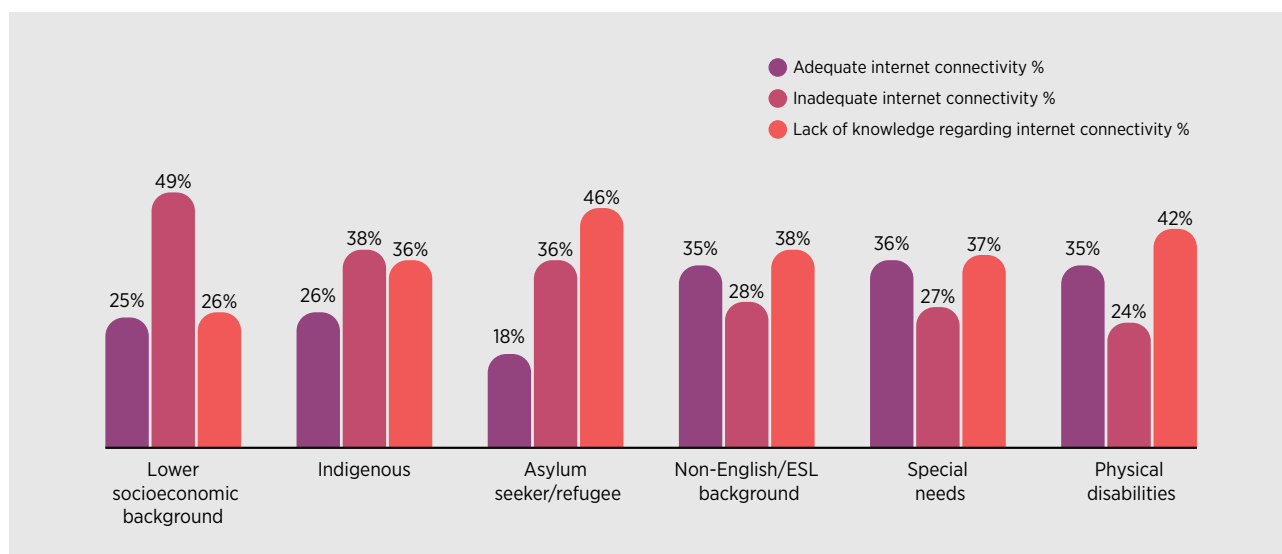

Figure 4 outlines perceptions of the adequacy of internet connection at home for vulnerable student groups.

Comparing the perceived levels of adequate internet connectivity among the different student groups (Figure 4) reveals significant disparities. Students from lower socioeconomic backgrounds are the most disadvantaged in their connection to the internet, with only 25% of respondents believing this group to have adequate connectivity and 49% identifying a lack of connectivity. Asylum seeker/refugee students are also highly affected by poor internet connectivity, with just 18% of respondents believing them to have adequate connectivity, 36% inadequate, and the highest uncertainty level at 46%. This indicates significant gaps in knowledge about this cohort's internet access.

Participants indicated that Indigenous students fare slightly better than students from lower socioeconomic backgrounds and asylum seekers/refugees in their internet connectivity, with 26% of respondents perceiving adequate connectivity and 38% of respondents reporting inadequate connectivity for this cohort. However, a high number of respondents (36%) were also uncertain about the internet connectivity of Indigenous students.

Students from non-English/ESL backgrounds, students with special needs and students with physical disabilities are reported to have largely similar levels of internet connectivity, with 35%, 36% and 35% of respondents reporting adequate connectivity for each group, respectively.

Figure 5 illustrates the levels of perceived knowledge among different staff groups regarding the adequacy of internet connectivity for vulnerable students.

Overall, school leaders indicated the highest level of perceived knowledge regarding the internet connectivity needs of students, with 85% indicating they are informed about students' internet connectivity. In comparison, 15% do not know about the adequacy of this connectivity. Classroom teachers, on the other hand, display a higher level of uncertainty, with 33% indicating they do not know and only 67% indicating knowledge about the connectivity status of their students.
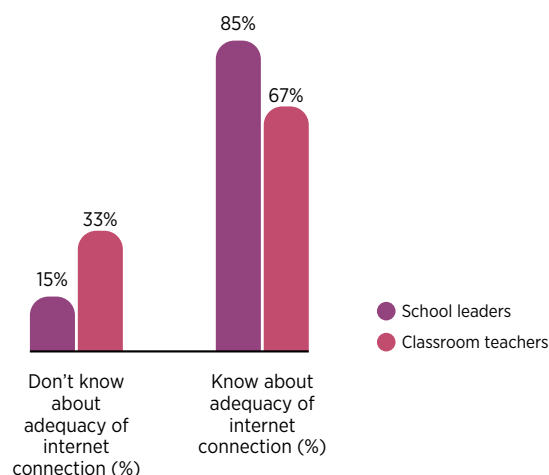
DIGITAL LITERACY AMONG VULNERABLE GROUPS

Figure 6. Perceived adequacy of digital literacy among vulnerable students (% of respondents)
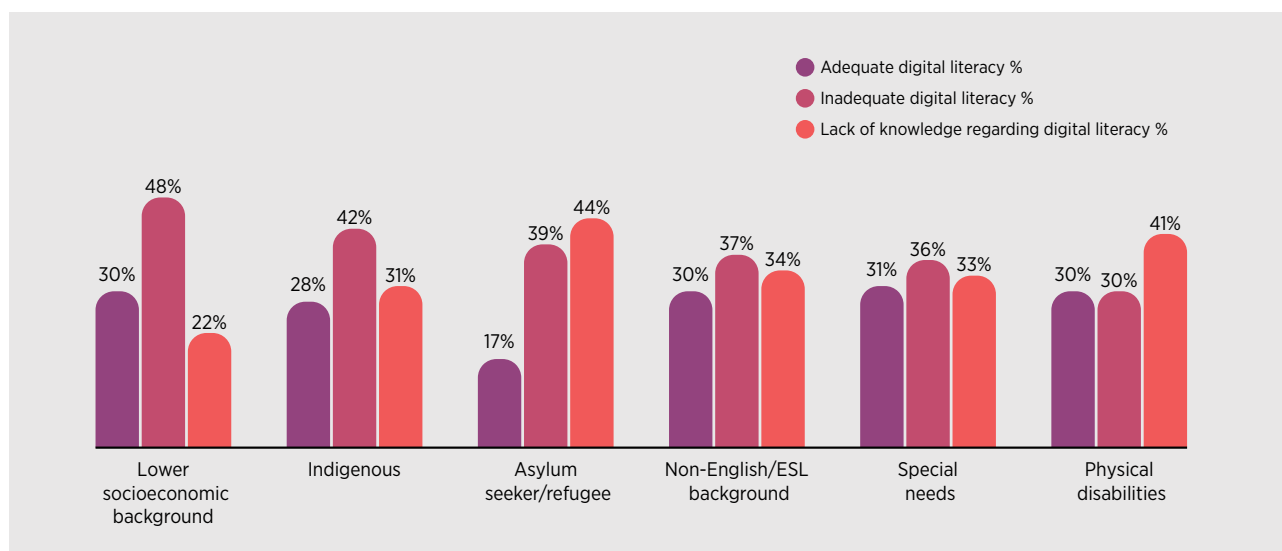

Figure 6 provides insights into the perceived adequacy of digital literacy among vulnerable student groups.

Overall, the data indicates a significant challenge in achieving adequate digital literacy for vulnerable student groups, with a substantial portion of respondents expressing concerns about digital literacy levels and a notable degree of uncertainty across all groups. The percentage of respondents who believe students have adequate digital literacy ranges from 17% for asylum seeker/refugee students to 31% for students with special needs. This indicates that while some groups are perceived to have higher digital literacy levels, these remain low overall.

Students from lower socioeconomic backgrounds show the greatest need for support, with 48% of respondents indicating that these students have inadequate digital literacy. Indigenous students also require substantial support, with only 42% of respondents stating that Indigenous students have inadequate digital literacy.

Asylum seeker/refugee students face significant challenges with digital literacy, with only 17% of respondents believing this group has adequate digital literacy, 39% reporting inadequate digital literacy, and a very high proportion of respondents (44%) indicating that they are uncertain about their digital literacy. A smaller percentage of respondents (17%) believe asylum seeker/refugee students to have the requisite level

of digital literacy compared to students from lower socioeconomic backgrounds (30%) and Indigenous students (28%).

In regard to students from non-English/ESL backgrounds, 30% indicated they have adequate digital literacy, compared to a higher proportion who believe this is inadequate (37%), while the remainder were uncertain (34%).

Students with special needs and physical disabilities also require significant support with digital literacy. 36% of respondents indicated that students with special needs have inadequate digital literacy, and 33% of respondents were uncertain about their levels of digital literacy. Similarly, 30% of respondents reported that students with a physical disability had inadequate levels of digital literacy, and 41% of respondents were uncertain. Both groups are perceived to have greater access to devices and the internet yet face substantial digital literacy challenges.

Overall, asylum seeker/refugee students, Indigenous students and students from lower socioeconomic backgrounds require the greatest levels of digital literacy support. Students with physical disabilities, non-English/ESL backgrounds and special needs students are perceived to experience moderate levels of disadvantage. The trend indicates persistent digital literacy issues accompanied by high levels of uncertainty amongst school staff regarding digital literacy across vulnerable groups.

Figure 7 illustrates the levels of perceived knowledge regarding digital literacy for vulnerable students among different staff groups. The data reveals significant disparities between school leaders and classroom teachers.

Figure 7. Awareness of digital literacy adequacy among vulnerable students, teachers vs. school leaders[101]
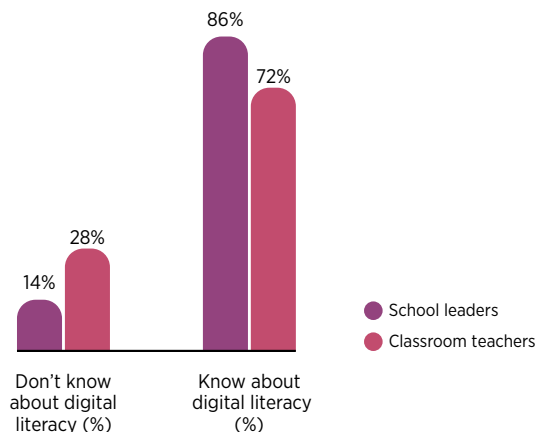

School leaders are most confident they know about the digital literacy of different groups, with 86% indicating they are informed about students' digital literacy and only 14% of school leaders reporting a lack of knowledge. Classroom teachers, in contrast, indicate a lower level of perceived knowledge, with only 72% feeling knowledgeable about students' digital literacy. A substantial 28% of classroom teachers indicate they lack knowledge in this area.

OVERALL DIGITAL INCLUSION AMONG VULNERABLE GROUPS

The data presented in Figures 2, 4 and 6 and reinforced as a composite average in Figure 8 underscore the pervasive issue of digital exclusion among vulnerable student groups.

Students from lower socioeconomic backgrounds and asylum seeker/refugee students consistently emerge as having the lowest levels of digital inclusion across all metrics – access to devices, internet connectivity and digital literacy.

Figure 8. Perceptions of overall digital equity among vulnerable students (% of all respondents)[102]
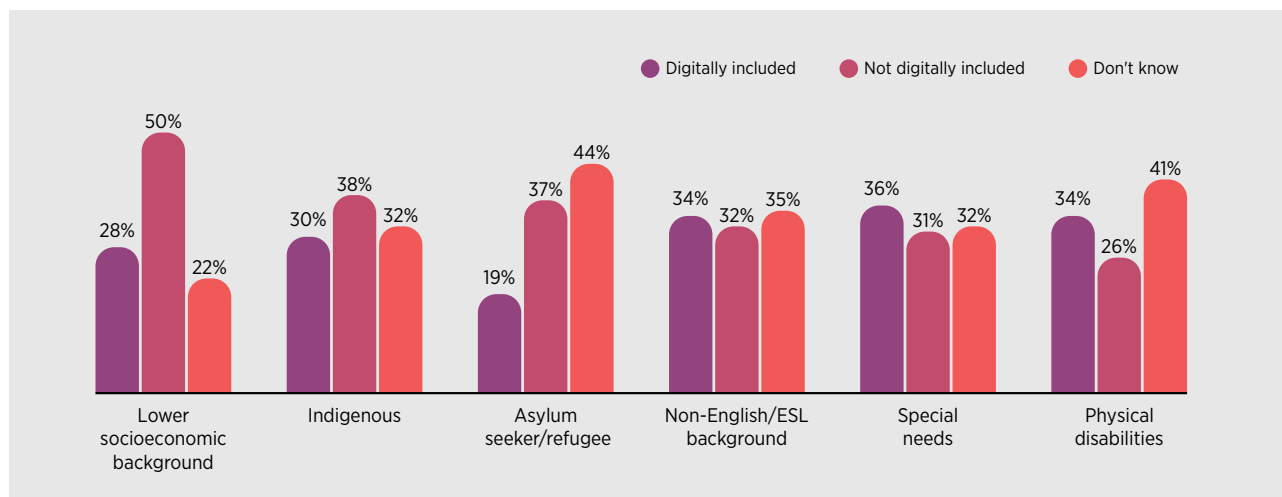
This data shows that teachers perceive a significant number of students from lower socioeconomic backgrounds (50%), as well as Indigenous students (38%), as being digitally excluded. Asylum seekers/refugees record the lowest levels of digital inclusion at 19%, with a substantial 44% of respondents indicating that they are not aware of the digital inclusion needs of these students and highlighting a critical gap in data. For those from a non-English/ESL background and individuals with special needs, the rates of digital inclusion are somewhat higher, yet a high percentage of each group falls into the 'Don't know' category. These figures highlight challenges and potential disparities in digital access among vulnerable populations, underscoring the need for targeted digital inclusion strategies.

These findings are consistent with other studies where students from low socioeconomic backgrounds recorded higher levels of digital exclusion than those from higher socioeconomic backgrounds and areas.[103] They are also consistent with other reports of a digital divide between newly arrived migrants, refugees and the broader Australian population, manifesting in both access to and utilisation of digital technologies. This disparity underscores challenges in connectivity, device availability and digital literacy skills, which hinder these groups from fully participating in the digital landscape and accessing essential online services and opportunities.[104]

Consistent with the ADII, Indigenous students also record high levels of digital inequity. While perceptions of adequate access to devices and internet connectivity for Indigenous students are somewhat better than for students from lower socioeconomic backgrounds and asylum seeker/refugee students, significant gaps remain.

Digital inequity was not reported to be the same across all vulnerable groups. However, it is still important to note that no group had more than 36% of respondents reporting adequate levels of digital inclusion. That is, digital inequity is a pressing concern for all the vulnerable groups studied.

It is also important to note that many respondents did not know if students had adequate access to devices, internet connectivity and digital literacy. Figure 8 reveals significant gaps in knowledge. The most considerable uncertainty is observed with regard to asylum seeker/refugee students (44%), followed by students with physical disabilities (41%). Additionally, a little over a third of respondents had limited knowledge about levels of digital inclusion among students from non-English/ESL backgrounds (35%), students with special needs (32%) and Indigenous students (32%).

Limited knowledge regarding the adequacy of digital equity of students from asylum seeker/refugee backgrounds may be attributed to the smaller cohort size compared with other groups, limited experience of teachers working with refugees/asylum seekers or limited knowledge around refugee or asylum seeker background or status. Given the large sample

from Western Sydney, however, it is likely that some respondents did not know about their students' access to devices, internet connectivity and digital literacy despite having contact with asylum seeker/refugee students.[105] These results reinforce the view that there is a significant knowledge gap and a pressing need to understand the digital inclusion needs not only for asylum seeker/refugee students but all students who may be vulnerable to digital exclusion.

SUFFICIENCY OF SUPPORT FROM SCHOOLS

The Digital Equity in NSW Schools Survey asked about the technology provisions supplied by schools for students to take home, such as dongles and laptops and whether these provisions were sufficient. These responses were then compared with data on vulnerable groups to identify gaps and needs among specific cohorts.[106]

As illustrated in Figure 9, only 31% of respondents believe the provisions provided by schools are sufficient for students from vulnerable groups. In contrast, 39% of respondents find the provisions adequate for all students, highlighting that the sufficiency of technology provisions is perceived to be lower for vulnerable groups than for the overall student population. This discrepancy underscores the need for targeted interventions to ensure equitable access to technology for vulnerable students.

Figure 9. Perceived sufficiency of technology provisions supplied by schools for the six vulnerable groups among students (% of all respondents)
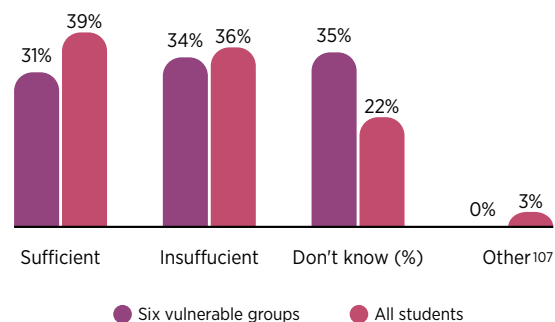
The high level of uncertainty about the adequacy of this support also indicates that more research is required to ensure that digital inclusion support measures offered by schools are effective in tackling digital inequity. The reported inadequacy of the provisions for all students at 36% is slightly higher than that reported at 34% for vulnerable students. However, this is explained by the high level of uncertainty about these provisions. Among staff who believe they know about the sufficiency of technological provisions, the sufficiency of provisions remains lower for vulnerable students.

Temporal changes: before, during and after the COVID-19 lockdowns

The Digital Equity in NSW Schools Survey examined respondents' thoughts on the sufficiency of devices, connectivity and digital literacy for students across three periods:

> › 12 months before the COVID-19 lockdowns
>
> › the period of the COVID-19 lockdowns (March 2020-October 2021)
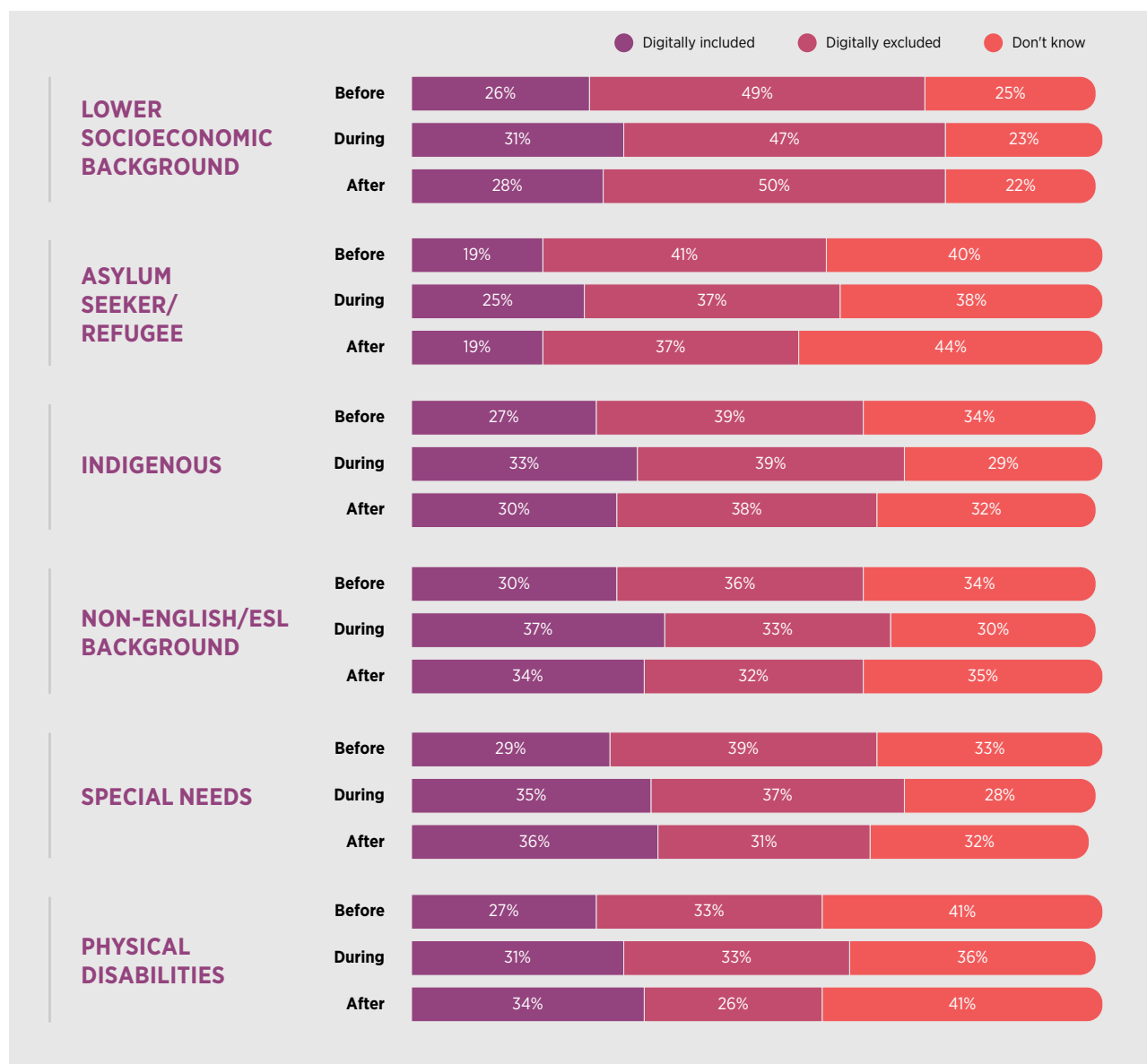>
> › the time of the survey in 2023.
>
> For simplicity, these periods are referred to as 'before', 'during' and 'after' COVID-19 while acknowledging that the effects of the COVID-19 pandemic are ongoing and that the virus continues to pose a significant health risk. The period between March 2020 and October 2021 is referred to as the pandemic period or lockdown period throughout the report.

**OVERALL DIGITAL INCLUSION AMONG VULNERABLE GROUPS:
BEFORE, DURING AND AFTER COVID-19 LOCKDOWNS**

Figure 10 aggregates responses on access to devices, internet connectivity and digital literacy to illustrate overall digital inclusion for the six vulnerable groups across the three time periods. The analysis uncovers that students from lower socioeconomic backgrounds have the highest reported rates of digital exclusion, regardless of the period examined.

Figure 10. Perceptions of digital inclusion before, during and after COVID-19 (% of respondents)[108]

Legend: Digitally included · Digitally excluded · Don't know

Group	Period	Digitally included	Digitally excluded	Don't know
LOWER SOCIOECONOMIC BACKGROUND	Before	26%	49%	25%
	During	31%	47%	23%
	After	28%	50%	22%
ASYLUM SEEKER/REFUGEE	Before	19%	41%	40%
	During	25%	37%	38%
	After	19%	37%	44%
INDIGENOUS	Before	27%	39%	34%
	During	33%	39%	29%
	After	30%	38%	32%
NON-ENGLISH/ESL BACKGROUND	Before	30%	36%	34%
	During	37%	33%	30%
	After	34%	32%	35%
SPECIAL NEEDS	Before	29%	39%	33%
	During	35%	37%	28%
	After	36%	31%	32%
PHYSICAL DISABILITIES	Before	27%	33%	41%
	During	31%	33%	36%
	After	34%	26%	41%

As visualised in Figure 10, perceptions of inadequate digital inclusion improved across the board during the pandemic, suggesting that students were more digitally included during the COVID-19 period.

For students from lower socioeconomic backgrounds, the perception of digital exclusion decreased from 49% before the pandemic to 47% during COVID-19. However, perceived levels of digital exclusion increased again afterwards (50%), surpassing the pre-pandemic levels.

> Students from lower socioeconomic backgrounds are perceived to be more digitally excluded now than they were prior to the COVID-19 pandemic.

This is despite more respondents perceiving this cohort to be slightly more digitally included than before (28% when compared to 26% before the pandemic). The higher perception of digital exclusion is due to fewer respondents saying that they did not know about the digital exclusion of this group. Therefore, knowledge of the digital exclusion of this group appears to have reduced after the COVID-19 pandemic, even though the digital exclusion of this group has increased.

Asylum seeker/refugee students recorded improved levels of digital inclusion during the pandemic, which then returned to similar levels. While the contrast between the pre- and post-digital inclusion for asylum seeker/refugee students is not as notable as those of students from lower socioeconomic backgrounds, this cohort also did not make any gains in digital equity after the COVID-19 pandemic. What is notable is that respondents were more likely to indicate that they did not know about the digital needs of asylum seeker/refugee students after the pandemic (44%).

Indigenous students were perceived to experience a slight improvement in digital inclusion during the pandemic when compared to before COVID-19, followed by a modest decline post-COVID-19. The data for Indigenous students show that perceptions of their digital inclusion have fluctuated over the three time periods. While there were modest improvements in perceived digital inclusion during the pandemic for Indigenous students, these gains were not fully sustained post-pandemic, with a slight decline in positive perceptions and a rebound in uncertainty about digital inclusion for this cohort.

Non-English/ESL background students were perecived to experience a consistent decrease in digital exclusion, both during and after the pandemic. However, fewer respondents believed this group to be digitally included in the post-pandemic period compared to during the COVID-19 lockdowns. This difference is attributed to greater uncertainty regarding the digital needs of this cohort in the post-pandemic period (35% 'don't know') compared to the pandemic period (30% 'don't know').

Students with special needs and physical disabilities saw notable improvements in their digital inclusion, with significant decreases in the percentage of respondents who did not believe that they had sufficient access to adequate access to devices, internet connectivity and digital literacy. This suggests that the measures taken during the pandemic had a lasting positive impact on these groups' digital inclusion perceptions.

Uncertainty among NSW staff regarding the digital inclusion needs of students decreased from before to during COVID-19 for all six vulnerable groups. However, this uncertainty increased again after COVID-19 for all groups except for students from lower socioeconomic backgrounds, where the knowledge regarding their digital inclusion remained relatively stable compared to the period during COVID-19. This reduction in uncertainty during COVID-19 could be attributed to the heightened focus on remote learning and the urgent need to address digital inequities during the pandemic, leading to better awareness and information gathering. As the immediate pressures of the pandemic eased, the uncertainty increased again for most groups, suggesting that the focused efforts and communication channels established during the crisis may have diminished.

**ACCESS TO DEVICES AMONG VULNERABLE GROUPS:
BEFORE, DURING AND AFTER COVID-19 LOCKDOWNS**

Figure 11 presents the respondents' perceptions on whether various vulnerable groups of students had adequate access to devices before, during and after COVID-19.

There was an improvement in perceived device access during COVID-19, with an increase in respondents believing that students in vulnerable groups had access to devices during COVID-19 when compared to the pre-COVID period. However, post-COVID-19 perceptions worsened when compared to the COVID-19 period.

Figure 11. Perceptions of device access adequacy for vulnerable groups before, during and after COVID-19 (% of all respondents)
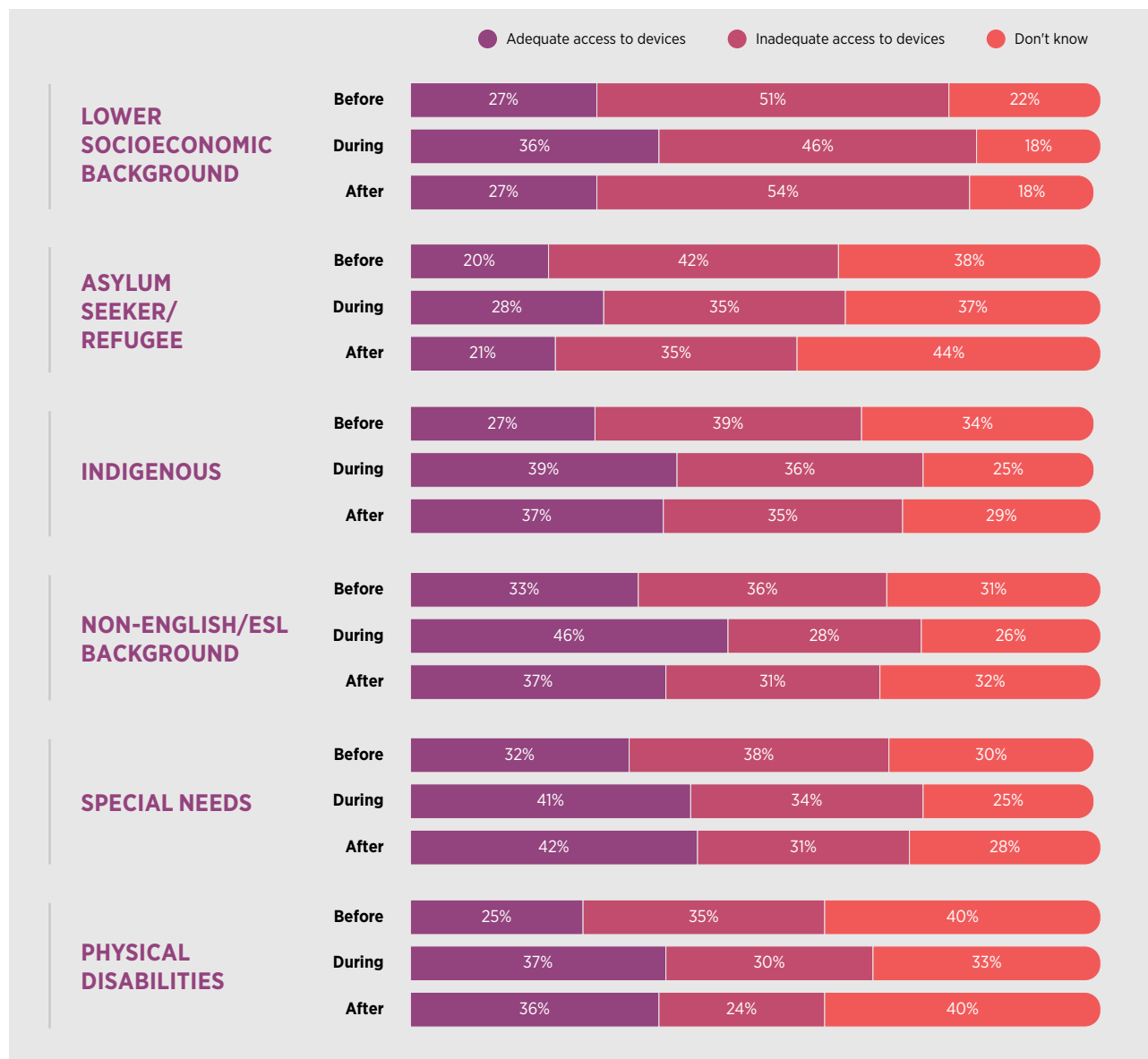
> Students from lower socioeconomic backgrounds are perceived to have less access to devices post-COVID-19 than prior to COVID-19.

The percentage of respondents who believed students from lower socioeconomic backgrounds lacked adequate device access decreased during COVID-19 (from 51% to 46%), while those who thought access improved increased (from 27% to 36%). However, post-pandemic, the belief that these students lacked access surged to 54%, with the perception of adequate access returning to pre-pandemic levels (27%). The number of respondents who did not know about access to devices for this group decreased for the pandemic period, reflecting increased awareness.

More respondents believed that asylum seeker/refugee students had adequate access to devices during COVID-19 compared to before the pandemic, with an increase in those believing students had adequate access (from 20% to 28%) and a decrease in those believing they lacked access (from 42% to 35%). However, post-pandemic uncertainty increased (to 44%), and the belief that asylum seeker/refugee students had adequate access dropped to 21%, indicating a rise in uncertainty and a perceived lack of progress in addressing access to devices for this group.

There was a notable increase in the number of respondents who believed that Indigenous students had adequate access to devices during the pandemic period when compared to the period prior to COVID-19 (from 27% to 39%). These positive perceptions slightly decreased for the post-pandemic period (37%) but remained higher than pre-pandemic levels. This suggests sustained, albeit diminished, improvements in device access for Indigenous students.

The belief that students from non-English/ESL backgrounds had adequate access to devices also increased during the COVID-19 period (from 33% to 46%). While perceptions of this group's adequate access to devices in the post-pandemic period (37%) improved compared to the pre-pandemic period, the improvements recorded during the pandemic were not perceived to have been sustained.

Students with special needs were perceived to have experienced a steady improvement in access to devices, with an increasing percentage of respondents believing they had adequate access to devices during and after the pandemic. Respondents similarly indicated that students with a physical disability experienced improved access to devices during the pandemic, with a slight drop post-pandemic. However, uncertainty about this group's access to devices returned to pre-pandemic levels.

INTERNET CONNECTIVITY AMONG VULNERABLE GROUPS: BEFORE, DURING AND AFTER COVID-19 LOCKDOWNS

Figure 12 illustrates the perceived levels of internet connectivity adequacy for various vulnerable groups before, during and after the COVID-19 lockdowns.

> The pandemic temporarily improved perceptions of internet connectivity for most vulnerable student groups, but these improvements have been difficult to maintain post-pandemic.

Figure 12. Perceptions of internet connectivity adequacy for vulnerable groups before, during and after COVID-19 (% of all respondents)

		Adequate internet connectivity	Inadequate internet connectivity	Don't know
LOWER SOCIOECONOMIC BACKGROUND	Before	21%	51%	28%
	During	27%	48%	25%
	After	25%	49%	26%
ASYLUM SEEKER/ REFUGEE	Before	21%	41%	38%
	During	25%	37%	38%
	After	18%	36%	46%
INDIGENOUS	Before	24%	40%	36%
	During	30%	39%	31%
	After	26%	38%	36%
NON-ENGLISH/ESL BACKGROUND	Before	30%	37%	34%
	During	36%	33%	31%
	After	35%	28%	38%
SPECIAL NEEDS	Before	24%	41%	35%
	During	31%	35%	33%
	After	36%	27%	37%
PHYSICAL DISABILITIES	Before	27%	34%	39%
	During	29%	33%	38%
	After	35%	24%	42%

Adequate internet connectivity was a concern for respondents regarding students from lower socioeconomic backgrounds, with 51% believing this group did not have adequate internet connectivity prior to the pandemic. While the pandemic slightly improved perceptions, with 48% believing students from lower socioeconomic backgrounds lacked adequate connectivity during the pandemic, post-pandemic concerns remain high, with 49% of respondents still believing this group lacks adequate internet connectivity. Concerningly, only 25% of respondents believe this cohort has adequate internet access in the post-pandemic period.

For asylum seeker and refugee students, before the pandemic, 41% of respondents doubted their connectivity, 21% believed it was adequate, and 38% were unsure. For the pandemic period, negative perceptions dropped to 37%, and positive perceptions rose to 25%, while uncertainty stayed almost the same at 38%. However, for the post-pandemic period, the belief in adequate connectivity declined sharply to 18%, suggesting that improvements were not only unsustained but worsened.

Internet connectivity perceptions modestly improved for Indigenous students when comparing pre- and post-pandemic periods. 40% of respondents believed Indigenous students lacked adequate connectivity before the pandemic, 24% thought their connectivity was sufficient, and 36% were uncertain. For the pandemic period, negative perceptions slightly decreased to 39%, positive perceptions rose to 30%, and uncertainty reduced to 31%. For the period after the pandemic, positive perceptions slightly declined to 26%, but negative perceptions also decreased to 38%, with uncertainty returning to pre-pandemic levels (36%).

Non-English/ESL students saw significant improvements in perceptions of the inadequacy of their internet connectivity over time. Before the pandemic, 37% of respondents believed these students had inadequate connectivity; this decreased to 33% during the pandemic and 28% afterward. However, there was also a notable increase in the number of respondents who were uncertain about this group's internet connectivity, rising from 31% to 38% from the COVID-19 and post-pandemic periods.

For students with special needs, before the pandemic, 41% of respondents doubted their connectivity, 24% thought it was adequate, and 35% were unsure. For the period of the pandemic, negative perceptions decreased to 35%, positive perceptions increased to 31%, and uncertainty slightly reduced to 33%. For the period after the pandemic, negative perceptions decreased further to 27%, and positive perceptions increased to 36%, although uncertainty remained relatively high at 37%. This group saw sustained positive trends post-pandemic.

Students with physical disabilities have experienced noticeable improvements in the perception of their internet connectivity over time. The percentage of respondents who believed these students had adequate internet connectivity increased from 27% before the pandemic, to 29% during, and 35% after the pandemic. There remains, however, a significant lack of knowledge among school staff with regard to the connectivity needs of this cohort, with 42% of respondents indicating that they do not know about the internet connectivity of this cohort in the post-pandemic period.

While perceptions of internet connectivity improved for all students during COVID-19, many of these gains were not fully sustained post-pandemic. The data suggests that students with physical disabilities and those with special needs experienced the most significant and sustained improvements in perceived internet connectivity over time. In contrast, asylum seeker and refugee students faced a significant decline in positive perceptions of their internet connectivity, with fewer respondents believing they had adequate internet access in the post-pandemic period compared to pre-pandemic levels.

ADEQUATE DIGITAL LITERACY AMONG VULNERABLE GROUPS: BEFORE, DURING AND AFTER COVID-19 LOCKDOWNS

The data from Figure 13 reveals important trends in perceptions of digital literacy adequacy among various vulnerable student groups for the periods before, during and after the COVID-19 pandemic. Generally, respondents perceived a notable improvement during the pandemic, with fewer respondents believing students lacked adequate digital literacy and more believing they had sufficient skills during lockdowns. However, post-pandemic trends varied, with some groups being perceived to have experienced sustained improvements. In contrast, others were perceived to have had a reversal of the gains made during the pandemic, along with an increase in uncertainty among school staff with regard to the digital literacy of students.

Figure 13. Perception of digital literacy adequacy for vulnerable groups before, during and after COVID-19 (% of all respondents)
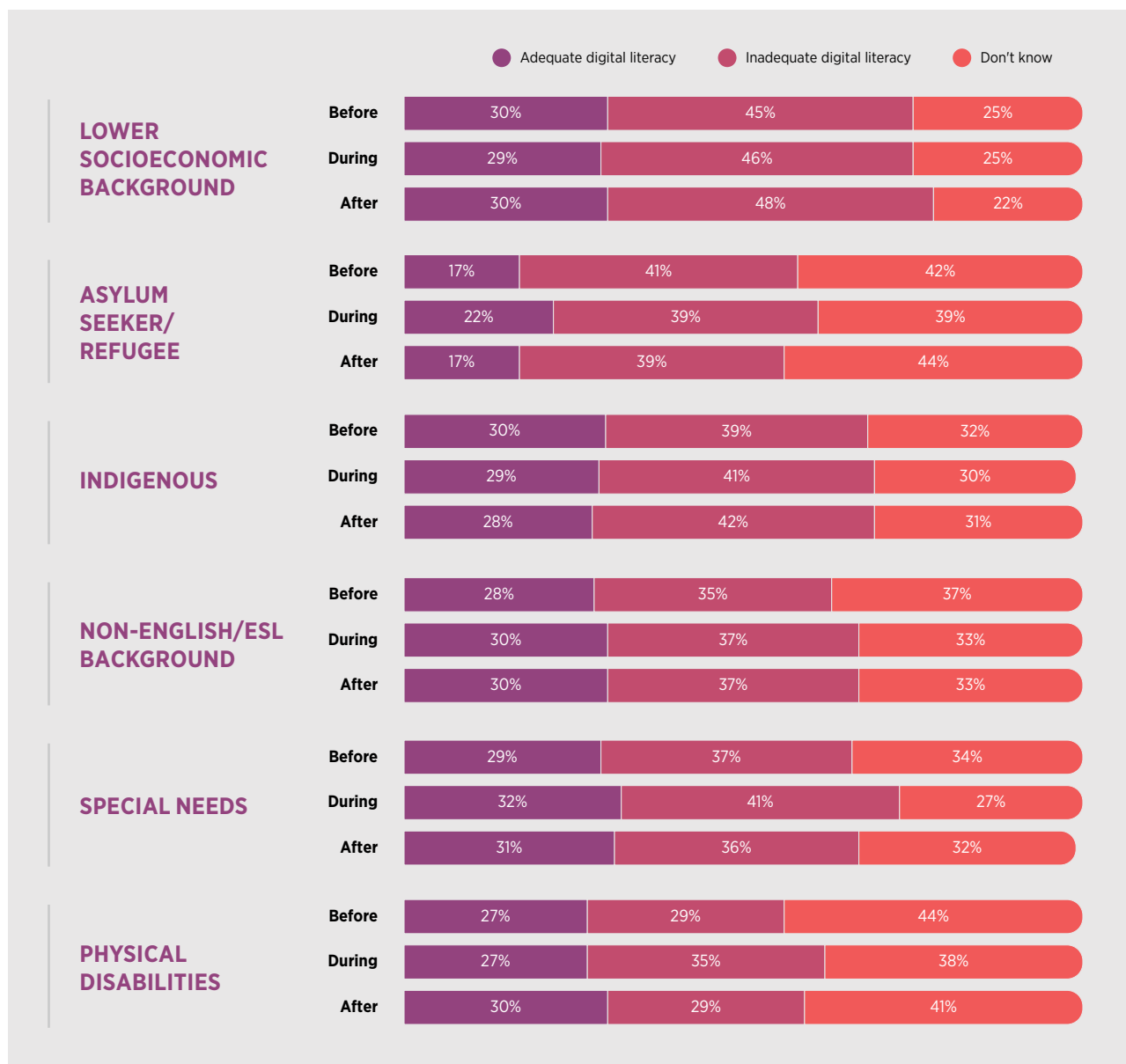
The perceived adequacy of digital literacy among students from lower SES backgrounds remained relatively stable over time, with 30%, 29%, and 30% of respondents believing this cohort had sufficient digital literacy before, during, and after COVID-19, respectively.

Respondents also believed they were more aware of the digital literacy needs of students in this cohort in the post-pandemic period compared to the pandemic and pre-pandemic periods.

Asylum seeker/refugee students had the lowest perceived levels of digital literacy compared to other vulnerable groups during the pre-pandemic period. Their digital literacy was believed to have improved during the pandemic, but respondents do not believe these gains have been sustained, with the number of respondents believing asylum seeker/refugee students have adequate digital literacy dropping back to the pre-pandemic level of 17%. The very high uncertainty rates for this group (42% before, 39% during, and 44% after) suggest ongoing concern among respondents regarding the true extent of digital literacy among asylum seeker/refugee students.

The digital literacy of Indigenous students prior to the pandemic was deemed to be adequate for 30% of respondents and inadequate for 39% of respondents. As with students from lower socioeconomic backgrounds, respondents reported a marginal drop in the adequacy of the digital literacy of this cohort (29% adequate, 41% inadequate) during the pandemic period and a continuing decline following the pandemic (28% adequate, 42% inadequate). This indicates that the adequacy of digital literacy in this cohort is believed to have declined rather than improved over time.

A total of 35% of respondents believed that Non-English/ESL students did not have sufficient digital literacy in the pre-pandemic period, and 28% believed that this cohort had adequate digital literacy. Positive perceptions of digital literacy adequacy increased slightly to 30% when respondents were asked about the pandemic period, while the perception of inadequate digital literacy also increased, but by a higher margin,

to 37%. This was due to a decline from 37% to 33% in the number of respondents who reported that they did not know about the digital literacy needs of this cohort before and during the pandemic. Interestingly, the perception of digital literacy adequacy for this cohort has remained unchanged in the post-pandemic period.

The perception of digital literacy among students with special needs improved during the pandemic, rising from 29% pre-pandemic to 32%. However, this perception slightly declined to 31% post-pandemic. While there were overall improvements between the pre-pandemic and post-pandemic periods, not all the gains made during the pandemic were sustained.

Perceptions of adequate digital literacy among students with physical disabilities remained unchanged during the pandemic, with 27% of respondents believing they had adequate digital literacy, the same as pre-pandemic. However, perceptions of inadequate digital literacy rose from 29% to 35% for the pandemic period, while the lack of knowledge declined from 44% to 38%. There was a considerable improvement in the post-pandemic period in positive perceptions, with 30% of respondents viewing this cohort as having adequate digital literacy. Despite this, uncertainty regarding the digital literacy of this group remained high post-pandemic at 41%.

These trends underscore the urgent need for ongoing attention and targeted interventions in digital literacy to ensure sustained and effective digital inclusion for all vulnerable student groups.

TECHNOLOGICAL PROVISIONS FROM SCHOOLS

The provision of technological resources, such as devices and dongles, is important to achieving digital equity. While this made headlines during the COVID-19 pandemic, it remains a key source of inequity.[109]

Survey data, outlined in Figure 14, shows how schools' technology provisions for students without charge evolved before, during and after the COVID-19 pandemic. The overall trend indicates a significant increase in the provision of technology during the pandemic, which somewhat declined post-pandemic but remained slightly higher than pre-pandemic levels.

Figure 14. Free technology provisions provided by schools to students (before, during and after COVID-19) (% of all respondents)
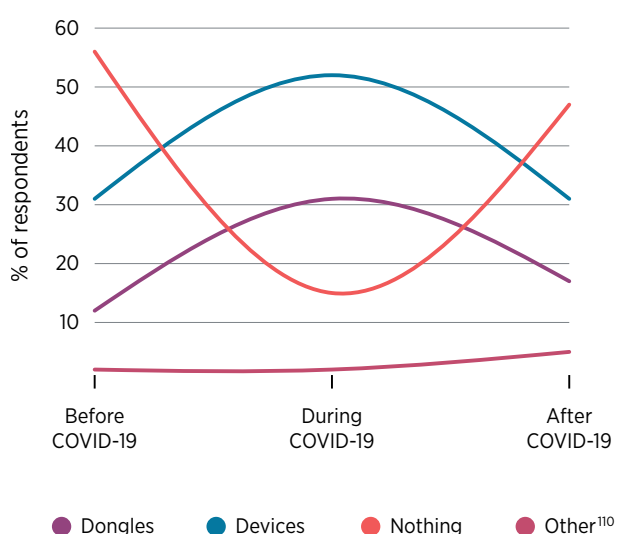
Before the pandemic, only 12% of respondents indicated that schools provided dongles to students without charge, 31% mentioned the provision of devices, and a substantial 56% stated that nothing was provided. A small fraction (2%) cited other provisions. During the pandemic, the situation improved markedly: 31% of respondents reported that schools provided dongles, and a significant 52% reported the provision of devices, reflecting the urgent measures taken to facilitate remote learning. The percentage of respondents who indicated that nothing was provided dropped sharply to 15%, while other provisions remained almost unchanged at 2%.

After the pandemic, the provisions saw a reduction compared to the peak during the pandemic. The provision of dongles decreased to 17%, and returned to the pre-pandemic level of 31%. The percentage of respondents indicating that nothing was provided increased to 47%, which, although higher than during the pandemic (15%) was still lower than the pre-pandemic level (56%). Other provisions saw a slight increase to 5%.

This data highlights the proactive steps taken by schools during the pandemic to ensure students had access to necessary technology for remote learning. The increase in the provision of dongles and devices during the pandemic underscores the emphasis on bridging the digital divide in a time of crisis. Post-pandemic, while there has been a decrease in these provisions, the levels remain better than before the pandemic, suggesting that some of the changes implemented during the pandemic had a lasting impact. The sustained higher provision rates for dongles and devices indicate a continued effort to support students. However, there is room for improvement in returning to the high support levels seen during the pandemic.

When compared to the trends observed in Figures 11 and 12, it is clear that the increased provision of technology during the pandemic positively influenced perceptions of device access and internet connectivity among vulnerable students. The data from Figure 14 aligns with the improved perceptions seen in Figures 11 and 12, where more students were believed to have adequate access to devices and internet connectivity during the pandemic. The decline in technology provisions post-pandemic might explain the slight regression in these perceptions.
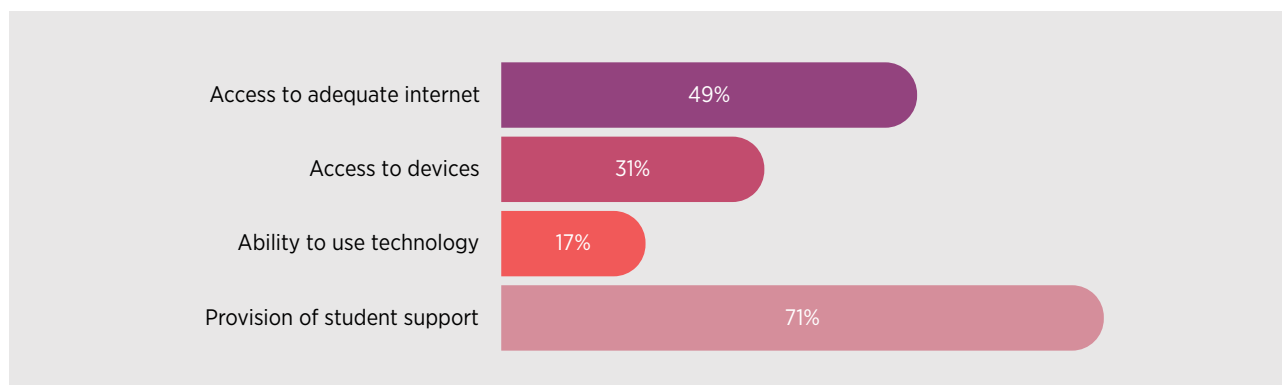
> While schools made significant strides in providing technology during the pandemic, this was not sustained, resulting in a return to a high level of digital inequity.

IMPROVEMENTS BETWEEN THE LOCKDOWNS

The survey data in Figure 15 tracks changes between the two major NSW lockdowns of 2020 and 2021, highlighting significant improvements in digital access and support for students. The responses demonstrate the positive impacts of simple and timely interventions that enhanced digital inclusion and produced positive impacts during these periods. However, these were not sustained, therefore limiting the long-term impact of these initiatives.

Figure 15. Perceived improvements in digital inclusion between the COVID-19 lockdowns in NSW schools

Access to adequate internet	49%
Access to devices	31%
Ability to use technology	17%
Provision of student support	71%

› **49% OF RESPONDENTS AGREED THAT ACCESS TO ADEQUATE INTERNET IMPROVED BETWEEN THE TWO LOCKDOWNS.**
This improvement likely reflects targeted interventions by schools and policymakers to address the digital divide exacerbated by the initial shift to remote learning, in addition to the priority given to accessing the internet by students and their families during the lockdown periods.

› **31% OF RESPONDENTS AGREED THAT ACCESS TO DEVICES IMPROVED BETWEEN THE TWO LOCKDOWNS.**
This significant improvement suggests that schools and educational authorities as well as students and their families prioritised having the necessary hardware to participate in online learning. The marked increase in device provisions during the pandemic, as shown in Figure 14, underscores the concerted efforts to bridge the gap in device access.

› **17% OF RESPONDENTS AGREED THAT STUDENTS' ABILITY TO USE TECHNOLOGY IN THEIR AT-HOME LEARNING ACTIVITIES IMPROVED BETWEEN THE TWO LOCKDOWNS.**
This improvement reflects both increased familiarity with digital tools and enhanced support from schools. Training sessions, tutorials and increased practice with online learning platforms likely contributed to students becoming more adept at using technology in their studies.

› **71% OF RESPONDENTS AGREED THAT SCHOOL SUPPORT GIVEN TO STUDENTS FOR THEIR USE OF TECHNOLOGY IMPROVED IN THE SECOND LOCKDOWN COMPARED TO THE FIRST.**
This substantial increase in perceived support highlights the adaptive measures taken by schools to better assist students with their technological needs.

The geography of digital equity: the Western Sydney context

The Western Sydney region should be at the forefront of discussions on digital equity in education. With its significant youth population and a diverse mix of communities, the region holds immense potential to spearhead initiatives that can bridge digital inequities. The region's demographic uniqueness underscores the importance of addressing digital disparities to ensure equitable access to educational technologies for young people, particularly those from lower socioeconomic and minority backgrounds.

In the Western Sydney region, barriers to digital equity are widespread and intersect with other challenges, such as language barriers, health and wellbeing and SES.[111] The most recent data from the ADII quantifies this lack of access to internet connection, the use of various types of digital devices and the frequency and intensity of technology use. As demonstrated in Figure 16, ADII

scores reveal that several LGAs in Western Sydney are experiencing significant digital inequity compared to the NSW state average of 73. Campbelltown, with a score of 72.3, falls short by 0.7 points. Canterbury-Bankstown registers a score of 70.2, which is 2.8 points below the state average. Cumberland's score of 71.7 is 1.3 points lower, while Liverpool's score of 71.2 is 1.8 points below the state average. Fairfield notably records the lowest levels of digital inclusion, with a score of 66.1, which is 6.9 points lower than the NSW average. These figures underscore the urgent need for targeted efforts to enhance digital equity in these Western Sydney LGAs.

Concerningly, levels of digital inequity have declined in some Western Sydney LGAs, including Fairfield, which dropped from 2.9 points in the ADII data released in 2023, when compared to the data published in 2022.

Figure 16. Australian Digital Inclusion Index 2023.
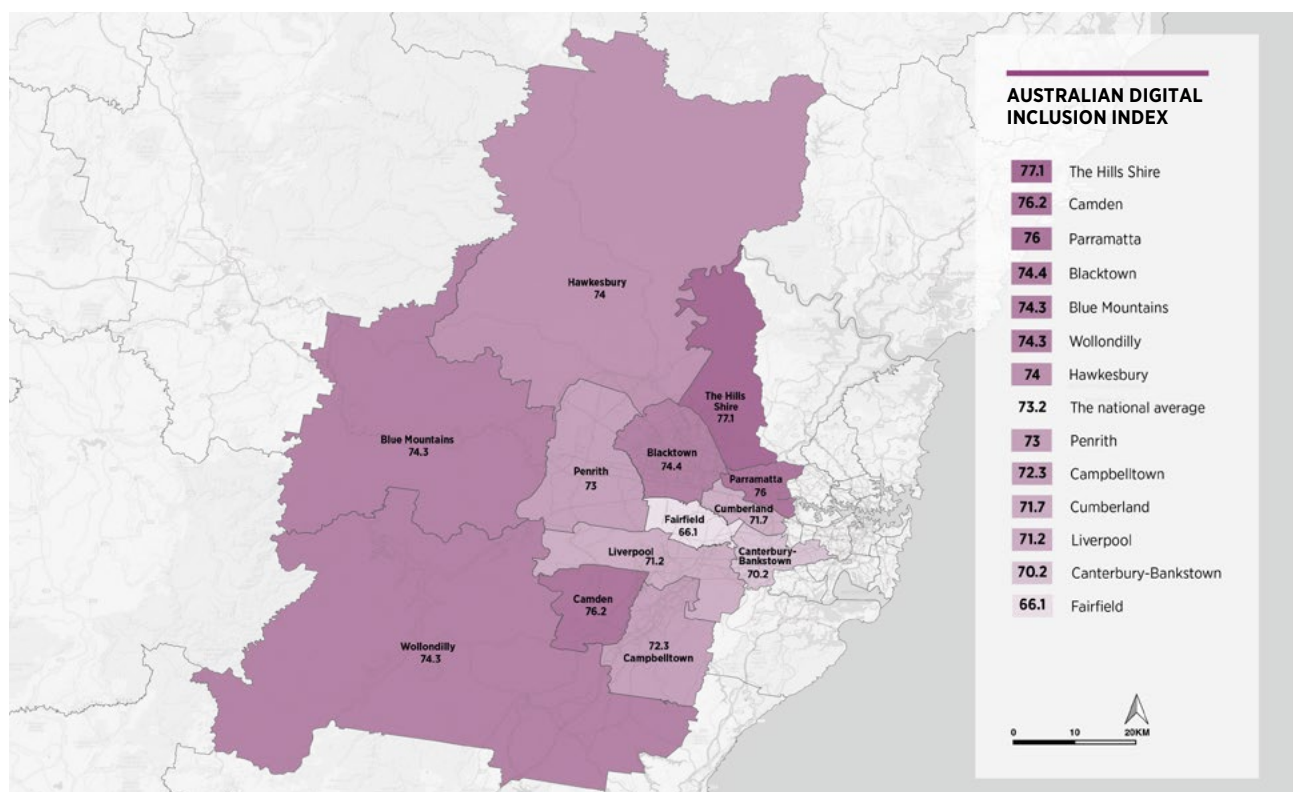
Source: ADII (2023).

The NSW Digital Connectivity Index (Connectivity Index), which measures the quality and effectiveness of digital connectivity in a specific area, reaffirms higher rates of digital inequity in Western Sydney than in the rest of Sydney. The Connectivity Index reflects a location's ability to support various digital activities, including remote work, online learning and mobile internet usage. A higher score indicates more favourable conditions for these digital activities. Key Western Sydney LGAs score lower on the Index:

› **The Digital Connectivity Index of Fairfield LGA at 43 places it 13 points below the NSW average index score of 56.**

› **Many other Western Sydney LGAs, including Liverpool (58), Canterbury-Bankstown (56), Penrith (58), Cumberland (57), Campbeltown (56) and the Hawkesbury (58), also scored both below the NSW metro suburbs average of 70 in the Connectivity index.**

These low access scores, recorded in September 2024, reflect the limited digital connectivity in many Western Sydney LGAs and highlight other adverse access-related outcomes for residents, such as minimal or infrequent internet usage, higher reliance on mobile-only connections and limited use of various online services.[112]

PROFILING THE WESTERN SYDNEY REGION

The Western Sydney region spreads across 9,000 square kilometres, with boundaries meeting south at Wollondilly, west to the Blue Mountains and north to Hawkesbury. The area comprises 13 LGAs with varying population sizes. The largest populations reside in the Blacktown, Canterbury-Bankstown and Parramatta LGAs.

Nearly 42% of this report's survey respondents work in schools in Western Sydney.

Aligning with previous projections, Western Sydney's population surpassed the rest of Sydney in 2021, with 2.62 million residents compared to 2.22 million in the rest of Sydney. By 2041, Western Sydney's population is projected to reach 3.4 million and account for 61% of Sydney's population growth.[113]

Figure 17. Map of Western Sydney and the rest of Sydney
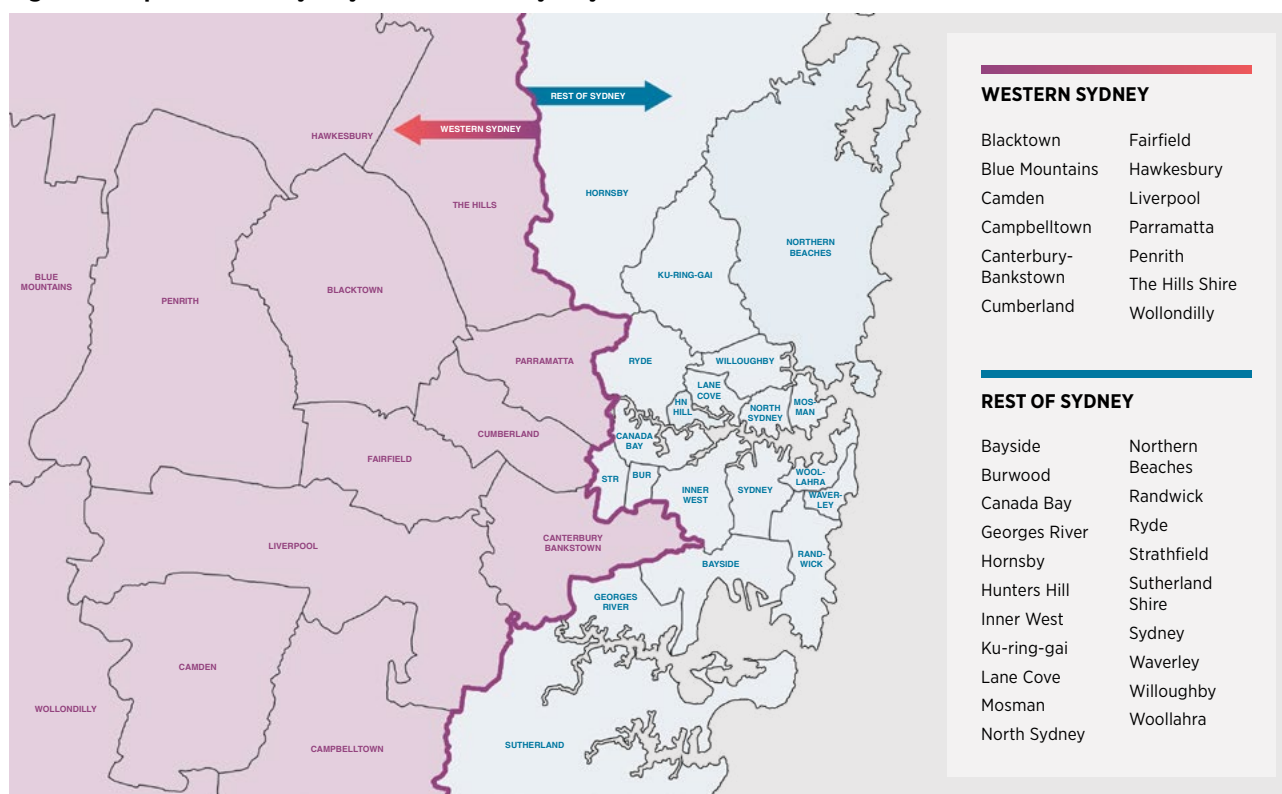
Western Sydney is the most multicultural region in Australia. 41% of residents were born overseas, and 48% speak a language other than English at home. It has a younger-than-average population, with a higher percentage of school-aged people (17%) than the rest of Sydney (15%), the state (16%) or the nation (16%).[114]

Within the educational landscape, Western Sydney hosts 40% more school students than the rest of Sydney, and 64% of school students in Western Sydney attend government schools, compared to 58% in the rest of Sydney. Notably, 35% of all students in NSW attend a school in Western Sydney.[115]

To capture place-based trends and needs, the findings are divided into three geographical regions: Western Sydney, the rest of Sydney and regional NSW, which encompasses the rest of the state outside of the Greater Sydney region.

Vulnerable students in Western Sydney

STUDENTS FROM LOW SOCIOECONOMIC BACKGROUNDS IN WESTERN SYDNEY

More than half of all residents in the region, or 52%, earn less than $800 a week compared to the rest of Sydney at 40%. This is less than the minimum wage, which currently stands at $882.80 a week before tax.[116]

> Only 15.8% of people in Western Sydney earn more than $1,750 a week – with almost double that, or 29.9%, of residents reaching that salary in the rest of Sydney.[117]

The Index of Relative Socioeconomic Disadvantage is one of four indexes that comprise the SEIFA developed by the ABS. It ranks areas in Australia according to relative socioeconomic disadvantage based on information from the five-yearly Census of Population & Housing. About two-thirds of those living in Fairfield earn less than the minimum wage, followed by Canterbury-Bankstown (59%) and Cumberland (57.9%).

These areas also have lower scores on the Digital Inclusion Index than the rest of NSW, particularly in LGAs such as Fairfield, Cumberland, Liverpool and Canterbury-Bankstown.

ASYLUM SEEKER/REFUGEE STUDENTS IN WESTERN SYDNEY

There are 8,927 students in Western Sydney on a humanitarian visa, 79% of the state total,[119] and more than 80% of people with a humanitarian visa who arrive in NSW are initially relocated to Western Sydney.[120]

STUDENTS FROM HOUSEHOLDS WHERE A LANGUAGE OTHER THAN ENGLISH IS SPOKEN, WESTERN SYDNEY

There are nearly 15% more students from households where a language other than English is spoken in Western Sydney, than in the rest of Sydney and nearly 35% more than in regional NSW.

PERCENTAGE OF NSW STUDENT COHORT WHO SPEAK A LANGUAGE OTHER THAN ENGLISH

Western Sydney	Rest of Sydney	Regional NSW
40.6%	25.9%	5.8%

INDIGENOUS STUDENTS IN WESTERN SYDNEY

Western Sydney has a higher population of Indigenous students than the rest of Sydney. The geographic distribution of Indigenous students in NSW is as follows:

PERCENTAGE OF NSW STUDENT COHORT WHO IDENTIFY AS INDIGENOUS[118]

Western Sydney	Rest of Sydney	Regional NSW
3.4%	1.3%	11.3%

STUDENTS WITH SPECIAL LEARNING NEEDS AND STUDENTS WITH PHYSICAL DISABILITIES IN WESTERN SYDNEY

More students require assistance with core activities in Western Sydney than in the rest of Sydney.[121]

PERCENTAGE OF NSW STUDENT COHORT WHO REQUIRE ASSISTANCE WITH CORE ACTIVITIES

Western Sydney	Rest of Sydney	Regional NSW
3.8%	2.4%	5.4%

These trends demonstrate the importance of identifying the intersecting barriers vulnerable groups face when it comes to both social and digital inequities. This can help identify groups and regions that need targeted assistance.[122]

Western Sydney survey findings

The data suggests that Western Sydney has a significantly smaller proportion of students with adequate digital provisions, literacy and support compared to the rest of Sydney, according to the NSW[125] school staff surveyed. Many students do not have adequate access, connectivity and abilities to participate fully in learning activities.

Combined, these findings suggest that there are significant digital inequities within metropolitan areas. This highlights the need for nuanced, place-based insights and policy responses that address digital inequities within cities. It is critical at a policy level that any strategy to combat digital inequity includes programs, initiatives and support for communities in suburban areas like Western Sydney, where there is limited knowledge of digital inequities and a shortage of relevant and effective resources to address digital gaps.

1

Only 25% of teachers from schools in Western Sydney believe that current technology provisions are sufficient, compared to 76% of respondents from schools in the rest of Sydney and 36% in regional NSW (Figure 18).
These responses also varied within the Western Sydney region, whereby higher levels of perceived sufficiency were recorded in Parramatta and the Blue Mountains LGAs, compared with lower rates in the LGAs across Blacktown, Cumberland, Liverpool and Camden.
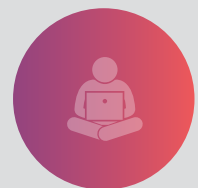
2

In Western Sydney and regional NSW, 27% and 25% of respondents, respectively, indicated that more than three-quarters of their students have adequate provisions, digital literacy and digital support (Figure 19).[123] This is lower than in the rest of Sydney, where 47% of teachers estimated that more than three-quarters of their students recorded higher levels of digital inclusion.
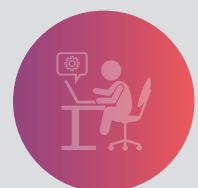
3

Only 12% of teachers in Western Sydney believe that more than three-quarters of their students have sufficient technical support at home (Figure 20), compared with 32% in the rest of Sydney. This was particularly low in regional NSW, where 9% of teachers believed more than three-quarters of their students had sufficient technical support at home. Within Western Sydney, respondents in the Blue Mountains recorded higher levels of confidence in technical support, whereas lower levels were recorded in Cumberland, Liverpool and Fairfield LGAs.
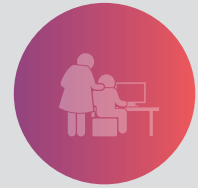
4

31% of school staff in Western Sydney believed that more than three-quarters of their students had an adequate number of appropriate devices, compared with 59% in the rest of Sydney and 39% in regional NSW (Figure 21).[124]
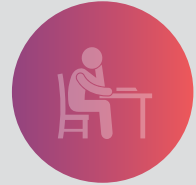
5

35% of respondents in Western Sydney indicated that more than three-quarters of their students had broadband internet (Figure 22), which is slightly higher than regional NSW (32%) and significantly lower (14% less) than the rest of Sydney (49%).

6

28% of respondents in Western Sydney indicated that more than three-quarters of their students had sufficient knowledge and skills to use relevant technologies (Figure 23), compared with 47% in the rest of Sydney and only 19% in regional NSW.
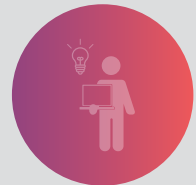
7

37% of respondents in Western Sydney believed that more than three-quarters of their students had access only to a mobile phone for learning rather than a more appropriate device. This is 20% higher than in the rest of Sydney, where only 17% of respondents believed the same and 12% higher than in regional NSW, where the figure was 25% (Figure 24). This also varied across Western Sydney, whereby Fairfield recorded the highest proportion of students with access to a mobile phone only.
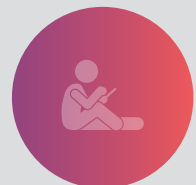
8

School staff in Western Sydney (91%) place greater significance on the future importance of digital inclusion than the average survey respondents (89%).
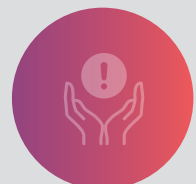
Figure 18. Perceived sufficiency of current technology provisions for student learning needs (% of respondents: Western Sydney, rest of Sydney, regional NSW)

Legend: ● Western Sydney ● Regional NSW ● Rest of Sydney

Insufficient: Western Sydney 44%, Regional NSW 38%, Rest of Sydney 9%
Sufficient: Western Sydney 25%, Regional NSW 36%, Rest of Sydney 76%
Don't know: Western Sydney 27%, Regional NSW 21%, Rest of Sydney 15%
Other: Western Sydney 4%, Regional NSW 5%, Rest of Sydney 0%
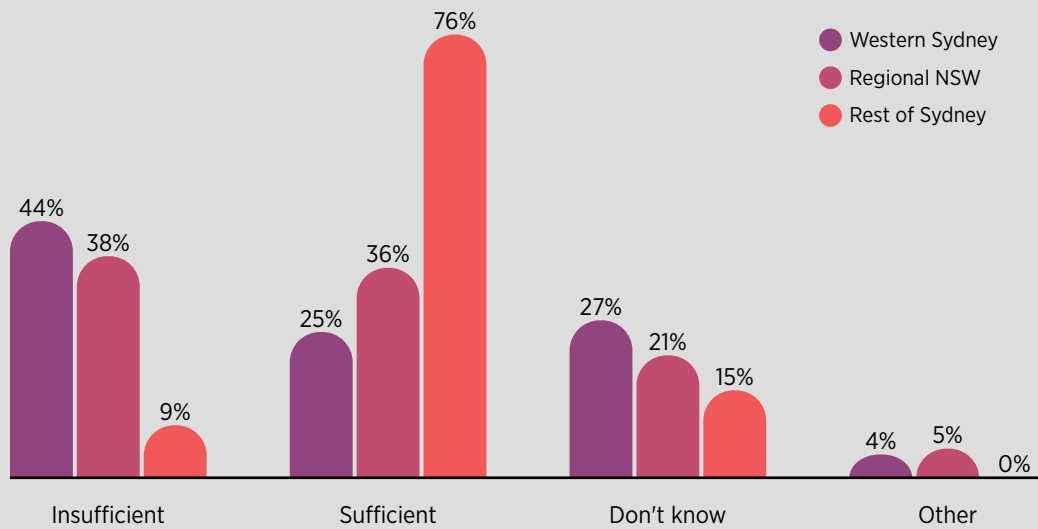
Figure 19. Percentage of participants who believe more than three-quarters of students have sufficient technology provisions, literacy and support (Western Sydney, rest of Sydney, regional NSW)

Western Sydney 27%
Rest of Sydney 47%
Regional NSW 25%
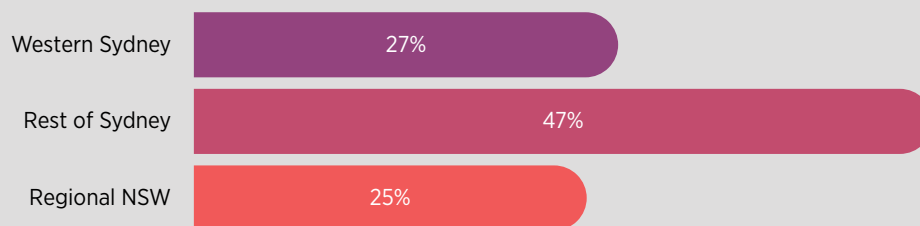
Figure 20. Percentage of participants who believe more than three-quarters of students have sufficient technical support at home (Western Sydney, rest of Sydney, regional NSW)

Western Sydney 12%
Rest of Sydney 32%
Regional NSW 9%
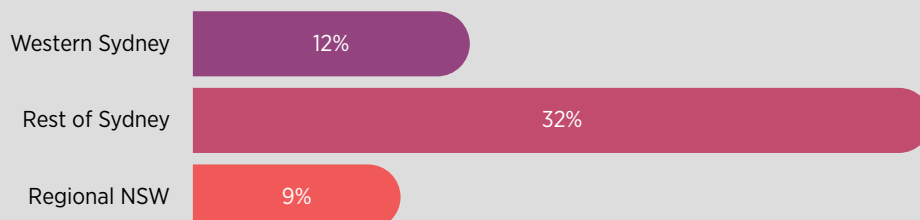
Figure 21. Percentage of participants who believe more than three-quarters of students have appropriate devices (Western Sydney, rest of Sydney, regional NSW)

Region	Percentage
Western Sydney	31%
Rest of Sydney	59%
Regional NSW	39%
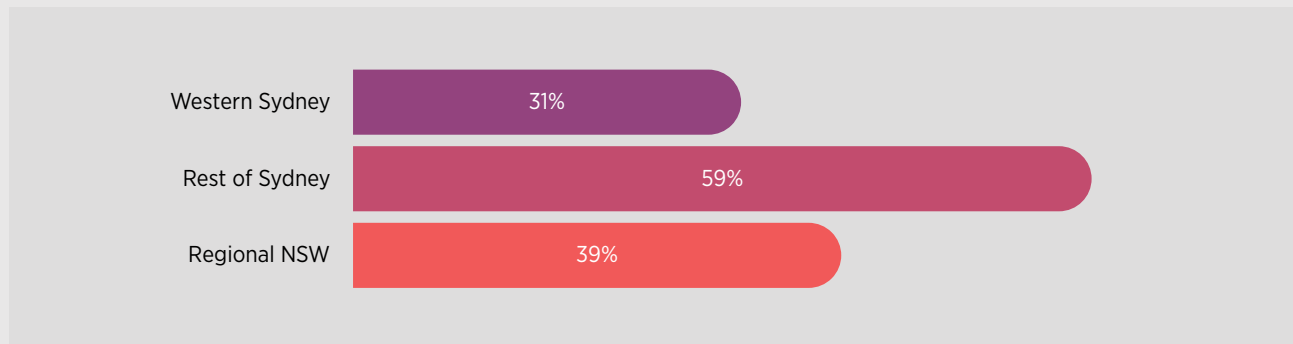
Figure 22. Percentage of participants who believe more than three-quarters of students have adequate broadband internet access (Western Sydney, rest of Sydney, regional NSW)

Region	Percentage
Western Sydney	35%
Rest of Sydney	49%
Regional NSW	32%
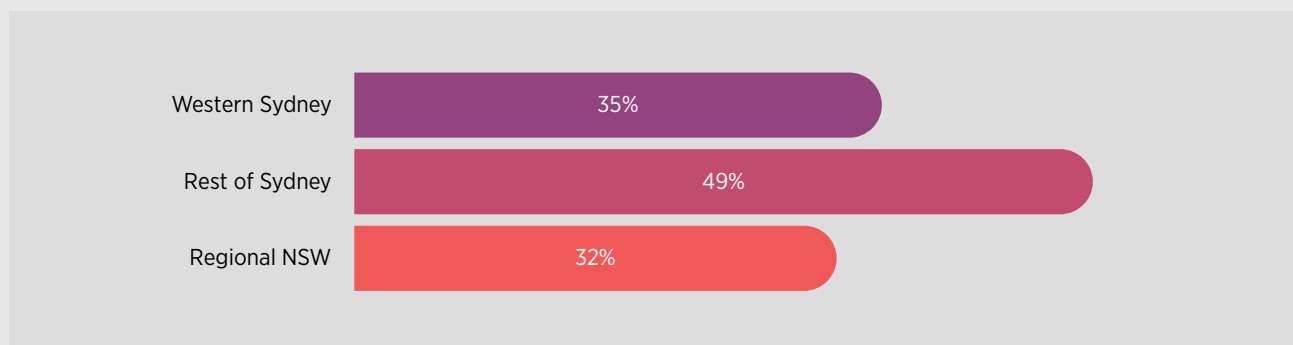
Figure 23. Percentage of participants who believe more than three-quarters of students have knowledge and skills to use relevant learning technologies (Western Sydney, rest of Sydney, regional NSW)

Region	Percentage
Western Sydney	28%
Rest of Sydney	47%
Regional NSW	19%
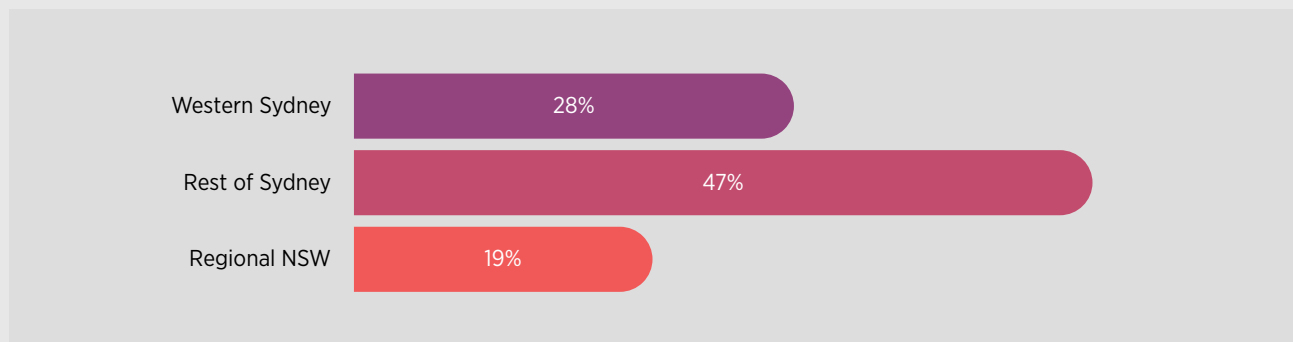
Figure 24. Percentage of respondents who believe more than three-quarters of students have access to a mobile phone only (Western Sydney, rest of Sydney, regional NSW)

Region	Percentage
Western Sydney	37%
Rest of Sydney	17%
Regional NSW	25%
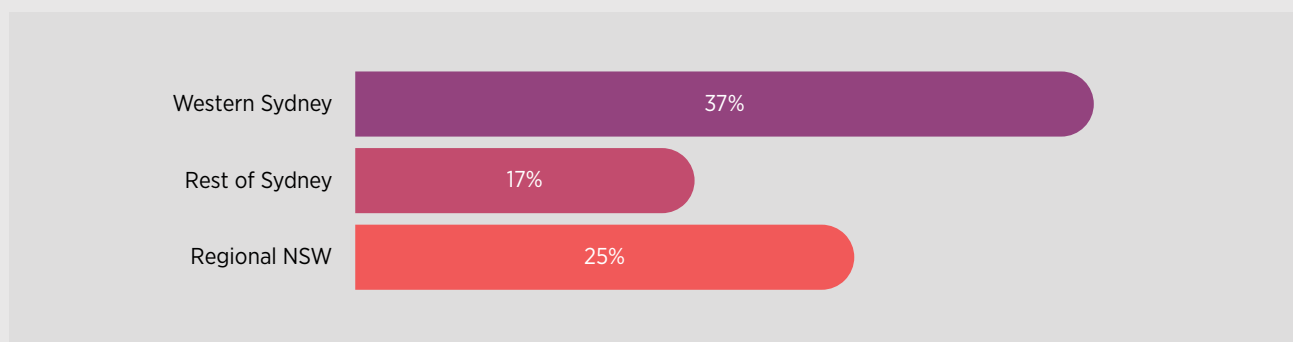
Digital equity in non-government and government schools

Digital inequities often reflect social inequities,[126] and Australia has been found to record one of the greatest degrees of inequity between government and non-government schools in the Western world.[127]

While a significantly smaller portion of respondents were from non-government schools (Independent and Catholic) (7%),[128] the survey revealed significant differences between government and non-government schools regarding digital inclusion and technology provisions:

> › **IMPORTANCE OF DIGITAL INCLUSION:** 91% of government school respondent agreed or strongly agreed that digital inclusion will become increasingly important in the future, compared to 62% from non-government schools.
>
> › **SUFFICIENCY OF TECHNOLOGY PROVISIONS:**
> 46% of government school respondents believed current technology provisions are sufficient, while 96% of respondents from non-government schools felt the same, a difference of 50%.
>
> › **TECHNICAL SUPPORT AT HOME:**
> 33% of government school respondents believed that more than three-quarters of their students had sufficient technical support at home, compared to 13% of respondents from non-government schools.

While these findings are limited by the smaller number of respondents from staff in non-government schools, they point to the need to investigate whether non-government schools have more technology provisions available or whether students at non-government schools are more likely to have adequate technology at home.[129]

The stronger recognition of the need for digital inclusion within government schools is likely due to the more pressing challenges they face in providing adequate technology and internet access to all students. In contrast, non-government schools, which generally have better resources, may not perceive digital inclusion as critically because their students may already have better access to digital tools and connectivity.

This finding highlights a critical issue for digital inclusion in education: the need for targeted policies and resources to bridge the gap between government and non-government schools. Addressing this gap is essential to ensure that all students, regardless of the type of school they attend, have equitable access to the digital tools and connectivity necessary for their education. The significant difference in perceptions underscores the urgency of enhancing digital infrastructure and support in government schools to foster an inclusive and equitable educational environment.

Future importance of digital inclusion

NSW school staff were asked if they believed that home access to devices, internet connectivity and technology support would become increasingly important for education in the future.

Over 85% of respondents agreed or strongly agreed that home access to devices, internet connectivity and technology support will become increasingly important in the future (Figure 25).

This highlights that digital equity will form critical components for effective and equitable education, especially considering the evolving digital landscape and potential shifts towards more hybrid or remote learning models.

Figure 25. Agreement on the importance of digital inclusion in the future

Access to devices	89%
At-home internet connectivity	87%
At-home technology	85%
At-home tech support	87%
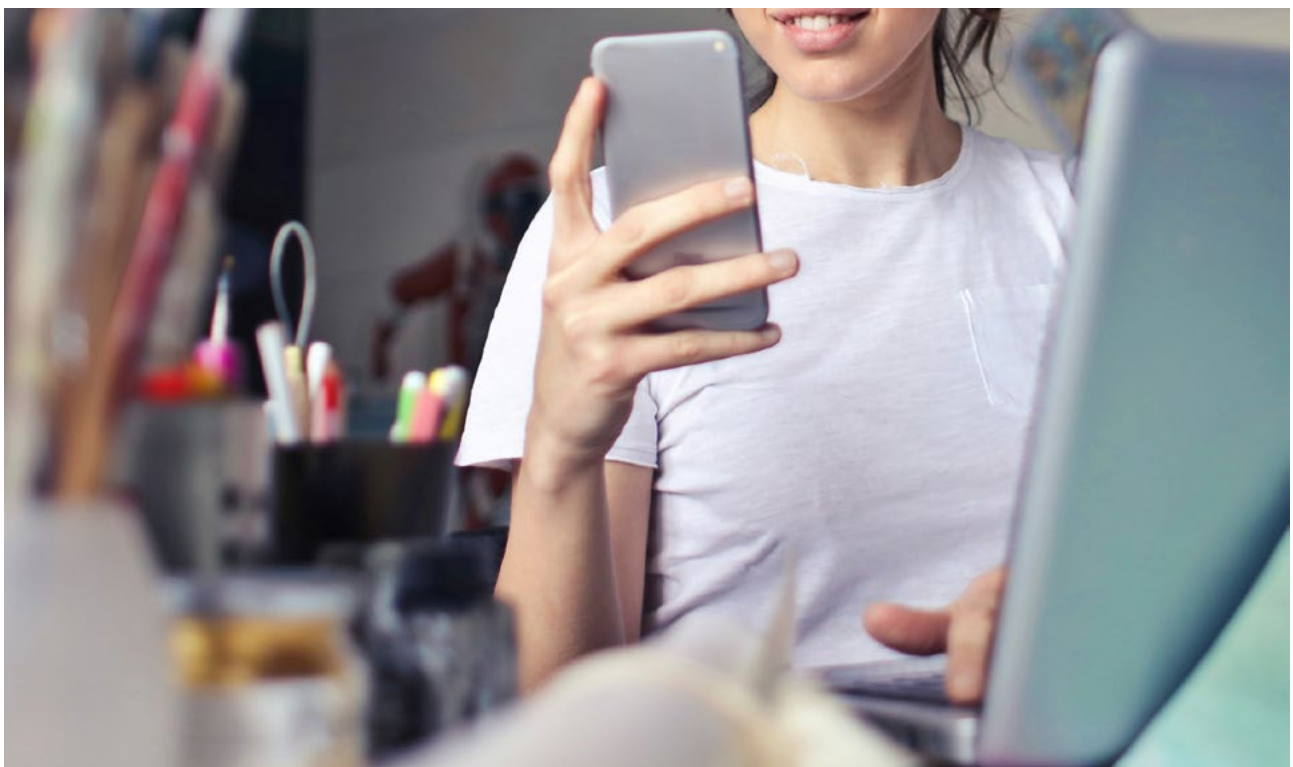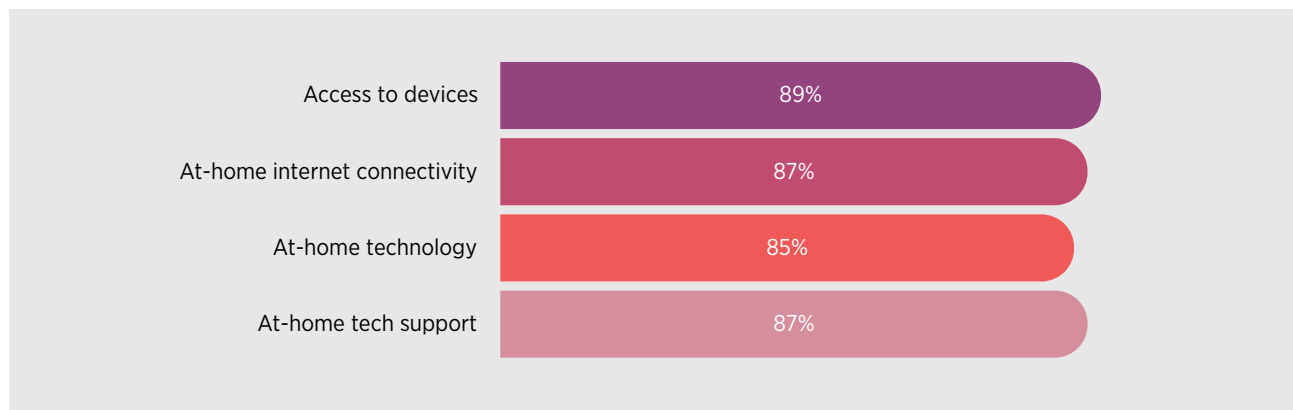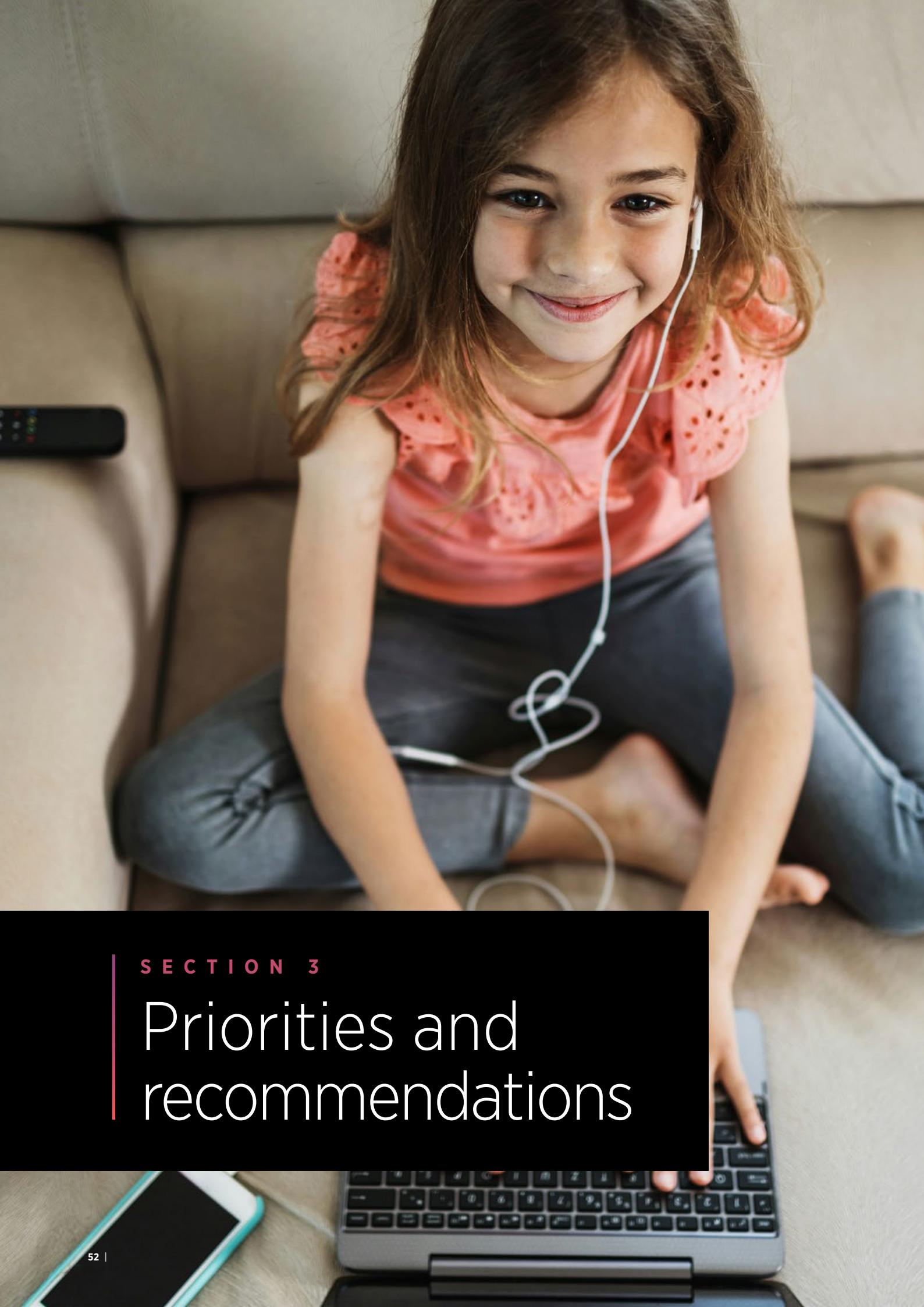
SECTION 3

Priorities and recommendations

Priorities and Recommendations

The findings of this report underscore the importance of prioritising digital equity in education, with a nuanced focus on vulnerable groups and geographical considerations – not just on a broader regional scale but also within metropolitan areas.[130] The barriers faced by students from lower socioeconomic backgrounds require tailored, place-based initiatives that create equitable opportunities for those most in need, particularly in key areas such as Western Sydney and regional NSW.[131]

The differences in responses from school leaders and classroom teachers also require further research, as does the perception of school staff on their student's at-home digital inclusion indicators more broadly. The findings presented suggest there are knowledge and communication gaps between classroom teachers and school leaders, resulting in different understandings of digital inclusion indicators relating to primary and high school students. This could affect how teachers allocate resources and areas of focus, as well as how leaders develop and action digital connectivity-related policies for their schools.

The identified disparities in access to devices, internet connectivity and the complexities of digital literacy illuminate the multifaceted digital equity challenges faced by students in diverse contexts. This highlights that that digital equity disparities extend beyond mere access to devices to encompass broader issues related to affordability, literacy and other forms of vulnerability.[132]

Reporting on the unique context of the COVID-19 pandemic, the report finds that the inequities exacerbated by COVID-19 have persisted. However, digital equity provisions during the crisis are no longer being made available to students, and the findings demonstrate that this has resulted in a decline in digital inclusion for students from low socioeconomic backgrounds in NSW schools, who are perceived to be more digitally excluded than before COVID-19. This is despite a large majority of respondents believing in the increased role of technology since the pandemic's arrival.

Key priorities and recommendations

Targeted, evidence-based recommendations co-designed with Wester'ly are proposed below, which seek to advance digital equity for students across NSW:

1

Do not assume students are digitally included

› Recognise that digital inclusion is not universal and ensure curriculum design is informed by accurate information regarding the digital needs of students.

› Equip school staff with detailed and relevant data regarding the digital access and literacy levels of students.

› Ensure school digital access policies are informed by evidence about student technology needs and disparities.

› Foster effective communication channels between classroom teachers and school leaders to collaboratively identify digital needs and implement targeted interventions.

2

Meet the digital needs of students from lower socioeconomic backgrounds and refugees/asylum seekers

› Develop targeted interventions to support digitally excluded students.

› Reassess Bring Your Own Device (BYOD) programs, ensuring that they do not discriminate against students from lower socioeconomic backgrounds. Implement policies to provide all students with access to devices and household broadband.

› Allocate additional digital equity funding to schools in low socioeconomic areas and with high populations of asylum seeker and refugee students to ensure that students from low socioeconomic households and asylum seekers or refugees have digital devices and high-speed internet connectivity.

3

Implement comprehensive and targeted digital literacy programs in schools

› Tailor digital literacy programs for vulnerable groups. Develop resources relevant to the local context, including language-specific and culturally appropriate materials.

› Offer ongoing professional development for teachers.

› Partner with local organisations for additional digital literacy training for students, parents and community members.

4

Invest in digital infrastructure in Western Sydney and regional NSW, where higher levels of digital exclusion are recorded

› Invest in digital resources and multilingual support services in public libraries and community organisations in Western Sydney and regional NSW.

› Collaborate with local governments and organisations to set up free and safe public Wi-Fi hotspots in underserved areas.

› Consider the establishment of a device bank to address the digital needs of students, particularly in areas of high digital inequity such as Western Sydney and Regional NSW.

5

Strengthen digital equity data collection and research

› Facilitate and fund partnerships between schools and researchers to address knowledge gaps.

› Invest in research that includes students, their parents and household members, alongside further comprehensive studies on teacher and staff perceptions of digital needs.

› Invest in longitudinal and qualitative research to explore key themes from this report, informing evidence-based policy development.

Research
Team

PROFESSOR AZADEH DASTYARI

DIRECTOR RESEARCH AND POLICY, THE WHITLAM INSTITUTE

Professor Azadeh Dastyari is the Director, Research and Policy at the Whitlam Institute and a Professor of Human Rights Law in the School of Law at Western Sydney University. Her research examines the protection of the right to protest, digital inclusion and minority rights, including the rights of Aboriginal and Torres Strait Islander peoples, refugees and communities made vulnerable by law and policy. Her expertise in law and policy has been sought by several Australian parliamentary committees, Members of the European Parliament and the United Nations.

DR RHONDA ITAOUI

DIRECTOR, CENTRE FOR WESTERN SYDNEY

Dr Rhonda Itaoui is a social researcher with expertise in human geography and the geographies of diversity and multiculturalism. As Director of the Centre for Western Sydney, she is committed to amplifying community voices and collaboratively working with various stakeholders, including researchers, industry professionals and government, to develop policies that meet community needs and foster the success of the Western Sydney region.

DR GINA HAWKES

SENIOR RESEARCHER, CENTRE FOR WESTERN SYDNEY

Dr Gina Hawkes is an anthropologist and qualitative methodology professional bringing expertise in social and cultural analysis, research design, oral histories and research ethics to diverse projects. Her PhD critiqued masculine stereotypes of Pacific Islander men in sports, and she has published in international books and journals on a diverse range of topics, including sport, play, leisure, critical methodologies and natural resource management. She has lectured in Environmental Humanities and Human Geography and is passionate about social justice through sport, leisure, art and play.

ASSOCIATE PROFESSOR TANYA NOTLEY

SCHOOL OF HUMANITIES AND COMMUNICATION ARTS AND INSTITUTE FOR CULTUREAND SOCIETY, WESTERN SYDNEY UNIVERSITY

Tanya Notley is Associate Professor in the School of Humanities and Communication Arts at Western Sydney University and a member of the Institute for Culture and Society. She collaborates with cultural institutions, education providers and social justice organisations in the areas of media literacy and digital inclusion. She is regularly invited to provide expert advice in these areas to media organisations, governments, UN agencies and industry. Tanya co-founded the Australian Media Literacy Alliance and served as co-chair from 2020–2023. She currently leads the Advancing Media Literacy in Australia research program at Western Sydney University.

Definitions and abbreviations

DIGITAL EQUITY:

Digital equity refers to fair and equitable access to digital technologies, resources and opportunities for all individuals and communities, regardless of factors such as SES, geographic location, age or educational background.

DIGITAL INCLUSION:

Digital inclusion requires that people have sufficient access to devices, affordable connectivity and the necessary skills and abilities to use digital technologies to participate in society.

INDIGENOUS AUSTRALIANS:

In line with Western Sydney University's Indigenous Strategy 2020–2025[133] and the University's Australia Indigenous Strategy 2022–2025,[134] the term Indigenous is used in this report to refer to Aboriginal and or Torres Strait Islander peoples or First Nations Peoples.

LOCAL GOVERNMENT AREA (LGA):

The geographic area that a local council is responsible for.

REST OF SYDNEY:

For this report, the rest of Sydney is referred to as all remaining LGAs of the Greater Sydney region apart from the 13 LGAs listed here as belonging to Western Sydney.

REST OF NSW:

This refers to NSW without the Greater Sydney region.

WESTERN SYDNEY:

Refers to the 13 LGAs of Blacktown, Blue Mountains, Camden, Campbelltown, Canterbury-Bankstown, Cumberland, Fairfield, Hawkesbury, Liverpool, Parramatta, Penrith, The Hills, Wollondilly.

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Appendices

Appendix A:
Supplementary context – The digital equity landscape in NSW Schools

Navigating the digital inclusion needs of students in NSW schools is challenging due to the distinct jurisdictional divisions between education and communications. Education falls under the purview of states and territories, whereas communications is a federal responsibility. This separation limits the ability to implement cohesive digital inclusion measures. Effective promotion and application of digital equity in education, therefore, necessitates collaborative efforts from different levels of government, educational institutions and industry.

Currently, in NSW, there is no state policy for schools regarding at-home technology, nor is there an over-arching policy for Catholic or other non-government/Independent schools. It is at the discretion of school leaders to decide how and what technology is provided to students to take home if needed.

In 1999, Australian state and Commonwealth governments produced the Adelaide Declaration on National Goals for Schooling in the Twenty-First Century, which declared that Australian students will 'be confident, creative and productive users of new technologies, particularly information and communication technologies'.[135] This led to an increased use of computer labs in schools. However, the demand for devices soon outstripped the resources available. Independent schools were the first to require computer devices for each student.[136] In 2008, the Melbourne Declaration, negotiated between Commonwealth and state governments, affirmed that Australian students should 'be creative and productive users of technology, especially ICT, as a foundation for success in all learning areas'.[137]

In 2008, a federal government policy was implemented to provide computers to high school students in Years 9–12.[138] This policy is no longer in effect. Primary school children were not issued devices. In fact, to date, there has been no federally mandated or funded program to provide devices to all students at the primary school level. Nevertheless, some primary schools have used a range of funding methods to secure computers and to provide them to students at a 1:1 level, with many schools allowing students to take the devices home.[139]

The NSW Department of Education initiated the Schools Digital Strategy in 2019, a three-stage roadmap. This strategy includes various programs and initiatives, such as the Rural Access Gap program, which targets digital upgrades in rural, remote and regional schools.[140] The Digital Classroom Officer program was also created under the strategy. It offered a one-day-a-week funded role for teachers to support them in embedding technology into their teaching, learning and daily practice.[141] A number of other programs were established as part of this strategy, often with a focus on rural, remote and regional areas.[142] While these initiatives are welcomed, our research has found that similar support is required for students in underserved metropolitan areas, like many suburbs within Western Sydney, where high numbers of students from lower socioeconomic backgrounds, Indigenous and minority backgrounds live and study.

In October 2022, the federal government introduced the School Student Broadband Initiative,[143] which will provide free NBN until 31 December 2025 for unconnected families with school-age students.[144] In January 2024, 6,000 families had signed up for the service, and the campaign was able to support up to 30,000 eligible households.[145] This initiative has been warmly welcomed; however, there are still concerns that the measures do not go far enough to address the considerable need in Australia. The Australian Communications Consumer Action Network (ACCAN) points out that while internet data to a subset of in-need students for a limited time is welcome, students also require 'the necessary tools to learn from home', such as adequate computers on a long-term basis.[146]

Most schools have either a BYOD policy or their own technology protocols, guided by several state government policies on social media use, information technology and the use of devices. While the NSW Department of Education BYOD policy was rescinded in 2020, many schools expect each student to have their personal device for learning, with some loaning devices or allowing the student to pay for the device over time.[147] On the loaning of devices for learning at home, the state policy states that 'schools may loan students devices for learning at home' and that it is up to principals and delegates to approve the loan of digital devices.[148] Recent research conducted with families of students in Western Sydney found that BYOD policies can be restrictive to families who cannot afford a device for each of their children and, therefore, cannot attend a BYOD school.[149]

Appendix B:
Supplementary data – NSW schools by the numbers

SCHOOLS IN NSW IN 2022[150]

Government schools: **2,151**[151]
Non-government schools: **969**

SCHOOL STAFF IN NSW

Government school teachers and staff: **94,719**[152]
Non-government school teachers and staff: **61,757**[153]

SCHOOL STUDENTS IN NSW[154]

Government school students: **791,435**
Non-government school students: **450,790**[155]

Appendix C:
Supplementary context – The Digital Equity in NSW Schools Survey

This report responds to a project that originated in 2020, prompted by community concerns within Western Sydney about unequal access to digital resources across geographical and student demographic lines. A collaboration was established between Western Sydney University researchers and Wester'ly, a community group dedicated to addressing digital inclusion issues, in response to the critical challenges posed by the COVID-19 pandemic. Motivated by a commitment to educational equity, Wester'ly and Western Sydney University researchers launched the digital equity in NSW schools survey, and this research examines the extent of digital inequity in education during and after the pandemic.

The Digital Equity in NSW Schools Survey was available for NSW school teachers, leaders and other staff to complete between April and June 2023.[156] After screening responses, a total of 445 responses from NSW school teachers and school leaders were analysed.

The survey was disseminated through 11 teacher groups on Facebook[157] and through the NSW Department of Education area coordinators who promoted the survey through their networks. It consisted of 34 main questions, which included multiple choice, Likert scale and a small number of optional open-text questions. This recruitment method maximised accessibility and engagement among school staff in NSW and reached specific regions.

The survey captured background information, including how long respondents had worked in schools, the postcode of the school they worked at, the type of school it was, and their role within the school. It then asked respondents a range of questions about the importance of digital inclusion in the future, student access to devices and the internet at home, students' digital skills and abilities to learn from home, the digital resources provided by their schools for home use, and what their perceptions are on the sufficiency of these various factors. Importantly, the survey explored three periods:

1. 12 months prior to March 2020 (pre-COVID-19)

2. from March 2020 to October 2021 (during and between the two major NSW lockdowns)

3. the time of the survey (April–June 2023).

The survey asked respondents to consider all students, as well as six key vulnerable groups.

It also asked if respondents were classroom teachers or school leaders due to the large responsibility in NSW on school leaders to guide their school's digital policies and programs. School leadership is a key driver of school digital inclusivity,[158] especially in NSW, where digital policies are largely at the discretion of school leaders.

The survey focused on at-home digital resources based on community consultations, desktop research and the spotlight the COVID-19 pandemic shone on digital inequities within the context of at-home learning. Namely, several studies undertaken during and after the major COVID-19 lockdowns demonstrated that a large number of students were missing out on vital education due to lack of access, connectivity and abilities.[159]

The survey sought to examine school staff perceptions of their student's at-home digital resources, including levels of awareness, as well as the perceived adequacy of digital access across vulnerable groups and periods in the context of the pandemic. Questions were asked about appropriateness, adequacy, and sufficiency (regarding devices, connections and literacy). These terms were not further defined in the survey; rather, it was up to respondents to choose how they interpreted levels of appropriateness, adequacy and sufficiency.

LIMITATIONS

The analysis of digital equity presented by the survey findings is based on the perceptions of NSW school staff. It does not include the perspectives of students, their parents or other household members. It is important to understand school staff perceptions as these can have a real impact on their students – school staff attitudes, beliefs and expectations can shape teaching approaches, support systems and resource allocation. Furthermore, examining the perceptions of leaders in comparison to other teaching staff can also provide valuable insights into existing knowledge gaps and the effectiveness of communication channels. This is particularly critical as leaders are largely responsible for NSW schools' digital policies and driving digital inclusion. It is important to note that OECD studies have identified that teachers worldwide tend to overestimate their students' digital competence,[160] which should be considered in the interpretation of the survey findings.

While the survey questions were designed to explore digital equity issues for several identified groups, they did not ask about all possible differences. For example, there were no questions about gender or sexuality, and age was divided by primary and secondary school only. Therefore, this survey does not capture intersectional disparities, which refers to how aspects of a person's social and political identities combine to create different modes of discrimination and privilege, whereby some students could fall into more than one of these groups. While this survey did not ask about intersectionality, this should form an important consideration for further research.[161]

In addition, the participant sample is not representative of the NSW school staff population, with an overrepresentation of government school respondents and those from Western Sydney.

It should also be noted that the survey collected quantitative data and did not include opportunities for qualitative inputs. The only exceptions were questions where participants could clarify key points after selecting 'other' for certain multiple-choice questions. It is envisaged that the findings outlined in this report will serve as valuable insights for subsequent qualitative studies to further examine key themes and issues uncovered in this initial report.

Appendix D:
Copy of the Digital Equity in NSW Schools Survey

D1 Including this year, how many years have you been working in primary and/or secondary schools?

○ Less than 1

○ 1 to 2

○ 3 to 4

○ 5 to 6

○ 7 to 8

○ 9 to 10

○ 10 +

1.1 Please indicate the extent to which you agree with the following statements about the future of digital inclusion in NSW public schools.

STATEMENT	STRONGLY DISAGREE (1)	SOMEWHAT DISAGREE (2)	NEITHER AGREE NOR DISAGREE (3)	SOMEWHAT AGREE (4)	STRONGLY AGREE (5)	NOT APPLICABLE (6)	DON'T KNOW/CAN'T SAY (7)
Access to devices will become increasingly important for education in the future.	○	○	○	○	○	○	○
Students' access to adequate internet for education will become increasingly important for education in the future.	○	○	○	○	○	○	○
Students' abilities to use technology in their home learning will become increasingly important for their education in the future.	○	○	○	○	○	○	○
Students' ability to access greater support in their use of technology will become increasingly important for their education in the future.	○	○	○	○	○	○	○

2.1 Do you currently work in one or more NSW public schools?

○ Yes

○ No

2.2 Please enter the postcode of the NSW school where you currently work.

_____

2.3 Which of the following options best describes the school <u>where you currently work?</u>

O Primary (K–6)

O Secondary (7–12)

O Combined (primary and secondary) school

O School for specific purposes

O Other _____

2.4 Which of the following options best describes the school you currently work at?

O Government

O Catholic

O Independent

O Other (please specify) _____

2.5 Which of the following options best describes your current educational role? If you have more than one or a different role than those listed, please select 'other' and provide further details.

O School leader

O Classroom teacher

O Other (including more than one type of role) _____

2.6 Reflecting on learning in the school where you currently work, how important is <u>students' home access</u> to learning technologies (e.g., technology devices and internet access) for participating in educational activities? *Feel free to comment on both categories, irrespective of your teaching role. If you would like to comment on other categories of students (e.g., students with special needs), please select 'Other' and provide further details.*

SCHOOLING	NOT IMPORTANT	SLIGHTLY IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT	NOT APPLICABLE	DON'T KNOW/ CAN'T SAY
Primary school students (K–6)	O	O	O	O	O	O	O
Secondary school students (7–12)	O	O	O	O	O	O	O
Other	O	O	O	O	O	O	O

2.7 Approximately what proportion of the students at the school where you currently you work have adequate access to the following types of technology and support necessary to participate in educational activities?

TECHNOLOGY AND OR SUPPORT	0–10%	11–25%	26–50%	51–75%	76–90%	91–100%	NOT APPLICABLE
An adequate number of appropriate devices (excluding mobile phones).	O	O	O	O	O	O	O
Only mobile phones.	O	O	O	O	O	O	O
Broadband internet.	O	O	O	O	O	O	O
Only mobile internet.	O	O	O	O	O	O	O
Sufficient knowledge and skills to use relevant technologies.	O	O	O	O	O	O	O
Sufficient technical support at home (e.g., parents or carers with technical knowledge).	O	O	O	O	O	O	O
For students with special needs, technologies that accommodate diverse abilities (e.g., visual impairment, hearing loss, neurodivergence, etc).	O	O	O	O	O	O	O

2.8 In the school where you currently work, which of the following technologies are currently provided to students for their participation in learning activities at home by the school without charge? (select all that apply).

O Internet dongles

O Devices for students to take home

O The school I worked at does not provide technologies for students to take home for participation in learning activities

O Other _____

2.9 Are these provisions sufficient to meet the needs of students to participate in learning activities?

O Yes

O No

O Don't know/can't say

O Not applicable

O Other _____

2.10 Please indicate whether students from the following groups in the school where you currently work have access to appropriate devices, adequate internet connection, and sufficient levels of digital literacy to participate in educational activities (note – more than one bubble can be selected in each row for evaluating all three categories shown):

VULNERABLE GROUP	ADEQUATE TECHNOLOGY DEVICES FOR LEARNING?			ADEQUATE INTERNET CONNECTIVITY FOR LEARNING?			ADEQUATE DIGITAL LITERACY FOR LEARNING?			NOT APPLICABLE
	YES	NO	DON'T KNOW/ CAN'T SAY	YES	NO	DON'T KNOW/ CAN'T SAY	YES	NO	DON'T KNOW/ CAN'T SAY	
Indigenous students	○	○	○	○	○	○	○	○	○	○
Students from non-English speaking or ESL households	○	○	○	○	○	○	○	○	○	○
Students with special learning needs	○	○	○	○	○	○	○	○	○	○
Students with physical disabilities	○	○	○	○	○	○	○	○	○	○
Students from lower socioeconomic backgrounds	○	○	○	○	○	○	○	○	○	○
Asylum seekers and/ or refugee students	○	○	○	○	○	○	○	○	○	○

3.1 Did you work at one or more NSW public schools any time from March 1, 2020 to October 31, 2021 (i.e., the period covering NSW lockdowns #1 and #2)?

○ Yes

○ No

Info: The following questions ask you for further information about a NSW school you worked at during any time between March 1, 2020 to October 31, 2021 (during COVID-19). If you worked at multiple schools between March 1, 2020 to October 31, 2021 please choose the school where you worked most of the time. Please answer all the following questions about the period March 1, 2020 to October 31, 2021 in relation to one school only (that is, the school where you spent the most time).

3.2. Please enter the postcode of the NSW school you worked at any time during <u>March 1, 2020 to October 31, 2021.</u>

_____

3.3 Which of the following options best describes the school you worked at any time during <u>March 1, 2020 to October 31, 2021?</u>

○ Primary (K–6)

○ Secondary (7–12)

○ Combined (primary and secondary) school

○ School for specific purposes

○ Other (including more than one type of school) _____

3.4 Which of the following options best describes the school you worked at any time during March 1, 2020 to October 31, 2021?

○ Government

○ Catholic

○ Independent

○ Other (please specify) _____

3.5 Which of the following options best describes your educational role between <u>March 1, 2020 and October 31, 2021?</u>
If you had more than one role or a different role to the ones listed, please select 'Other' and provide further details.

○ School leader

○ Classroom teacher

○ Other (including more than one type of role) _____

3.6 During <u>March 1, 2020 to October 31, 2021,</u> how important was students' home access to learning technologies (e.g., technology devices and internet access) for participating in educational activities for primary and secondary students?
Feel free to comment on both categories irrespective of your teaching role. If you would like to comment on other categories of students (e.g., students with special needs), please select 'Other' and provide further details.

SCHOOLING	NOT IMPORTANT	SLIGHTLY IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT	NOT APPLICABLE	DON'T KNOW/ CAN'T SAY
Primary school students (K–6)	○	○	○	○	○	○	○
Secondary school students (7–12)	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○

3.7 From <u>March 1, 2020 to October 31, 2021,</u> approximately what proportion of students had adequate access to the following types of technology and support necessary to participate in educational activities?

TECHNOLOGY AND OR SUPPORT	0–10%	11–25%	26–50%	51–75%	76–90%	91–100%	NOT APPLICABLE
An adequate number of appropriate devices (excluding mobile phones).	O	O	O	O	O	O	O
Only mobile phones.	O	O	O	O	O	O	O
Broadband internet.	O	O	O	O	O	O	O
Only mobile internet.	O	O	O	O	O	O	O
Sufficient knowledge and skills to use relevant technologies.	O	O	O	O	O	O	O
Sufficient technical support at home (e.g., parents or carers with technical knowledge).	O	O	O	O	O	O	O
For students with special needs, technologies that accommodate diverse abilities (e.g., visual impairment, hearing loss, neurodivergence, etc).	O	O	O	O	O	O	O

3.8 From <u>March 1, 2020 to October 31, 2021,</u> which of the following technologies were provided to students for their participation in learning activities at home by the school without charge? (select all that apply).

O Internet dongles

O Devices for students to take home

O The school I worked at did not provide technologies for students to take home for participation in learning activities prior to March 1, 2020

O Other _____

3.9 Were these provisions sufficient to meet the needs of students to participate in learning activities?

O Yes

O No

O Don't know/can't say

O Not applicable

O Other _____

3.10 From <u>March 1, 2020 to October 31, 2021,</u> please indicate whether students from the following groups in the school where you worked had access to appropriate devices, adequate internet connection, and sufficient levels of digital literacy to participate in educational activities (note – more than one bubble can be selected in each row for evaluating all three categories shown):

VULNERABLE GROUP	ADEQUATE TECHNOLOGY DEVICES FOR LEARNING?			ADEQUATE INTERNET CONNECTIVITY FOR LEARNING?			ADEQUATE DIGITAL LITERACY FOR LEARNING?			NOT APPLICABLE
	YES	NO	DON'T KNOW/ CAN'T SAY	YES	NO	DON'T KNOW/ CAN'T SAY	YES	NO	DON'T KNOW/ CAN'T SAY	
Indigenous students	○	○	○	○	○	○	○	○	○	○
Students from non-English speaking or ESL households	○	○	○	○	○	○	○	○	○	○
Students with special learning needs	○	○	○	○	○	○	○	○	○	○
Students with physical disabilities	○	○	○	○	○	○	○	○	○	○
Students from lower socioeconomic backgrounds	○	○	○	○	○	○	○	○	○	○
Asylum seekers and/ or refugee students	○	○	○	○	○	○	○	○	○	○

4.1 Did you work in the same school during both NSW lockdowns and periods of at-home learning (i.e., both 2020 and 2021)?

○ Yes

○ No

4.2 Based on your experience working in schools during both lockdowns, please indicate the extent to which you agree with the following statements.

STATEMENT	STRONGLY DISAGREE	SOMEWHAT DISAGREE	NEITHER AGREE NOR DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	NOT APPLICABLE	DON'T KNOW/ CAN'T SAY
Students' access to devices improved between the two periods of at-home learning (2020 and 2021).	○	○	○	○	○	○	○
Students' access to adequate internet improved between the two periods of at-home learning (2020 and 2021).	○	○	○	○	○	○	○
Students' ability to use technology in their at-home learning activities improved (2020 and 2021).	○	○	○	○	○	○	○
School support given to students for their use of technology improved in the second lockdown when compared to the first (2020 and 2021).	○	○	○	○	○	○	○
The role of technology at home for student learning has increased since the two lockdowns (end of October 2021 onwards).	○	○	○	○	○	○	○
The importance of technology at home for student learning is likely to increase in the future.	○	○	○	○	○	○	○

5.1 Did you work in one or more NSW public schools at any time during the 12 months prior to March 1, 2020 (i.e., pre-COVID-19 pandemic)?

○ Yes

○ No

Info: *The following questions ask you for further information about a NSW school you worked at during any time in the 12 months prior to March 1, 2020 (pre-COVID-19). If you worked at multiple schools in the 12 months prior to March 1, 2020, please choose the school you spent the most time at. Please answer all the following questions about the 12 months prior to March 1, 2020 about one school only (that is, the school where you spent the most time).*

5.2 Please enter the postcode of a NSW school you worked at during the 12 months prior to March 1 2020.

_____

5.3 Which of the following options best describes the school you worked at during the 12 months prior to March 1 2020?

○ Primary (K–6)

○ Secondary (7–12)

○ Combined (primary and secondary) school

○ School for specific purposes

○ Other (including more than one type of school) _____

5.4 Which of the following options best describes the school you worked at during the 12 months prior to March 1 2020?

○ Government

○ Catholic

○ Independent

○ Other (please specify) _____

5.5 Which of the following options best describes your educational role during the 12 months prior to March 1, 2020?
If you had more than one role during this time or a different role to the ones listed, please select 'Other' and provide further details.

○ School leader

○ Classroom teacher

○ Other (including more than one type of role) _____

5.6 In the 12 months prior to March 1, 2020, how important was students' home access to learning technologies (e.g., technology devices and internet access) for participating in educational activities? *Feel free to comment on both categories, irrespective of your teaching role. If you would like to comment on other categories of students (e.g., students with special needs), please select 'Other' and provide further details.*

SCHOOLING	NOT IMPORTANT	SLIGHTLY IMPORTANT	MODERATELY IMPORTANT	VERY IMPORTANT	EXTREMELY IMPORTANT	NOT APPLICABLE	DON'T KNOW/ CAN'T SAY
Primary school students (K–6)	○	○	○	○	○	○	○
Secondary school students (7–12)	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○

5.7 In the <u>12 months prior to March 1, 2020,</u> what proportion of students do you estimate had adequate access to the technologies necessary to participate in educational activities?

TECHNOLOGY AND OR SUPPORT	0–10%	11–25%	26–50%	51–75%	76–90%	91–100%	NOT APPLICABLE
An adequate number of appropriate devices (excluding mobile phones).	○	○	○	○	○	○	○
Only mobile phones.	○	○	○	○	○	○	○
Broadband internet.	○	○	○	○	○	○	○
Only mobile internet.	○	○	○	○	○	○	○
Sufficient knowledge and skills to use relevant technologies.	○	○	○	○	○	○	○
Sufficient technical support at home (e.g., parents or carers with technical knowledge).	○	○	○	○	○	○	○
For students with special needs, technologies that accommodate diverse abilities (e.g., visual impairment, hearing loss, neurodivergence, etc).	○	○	○	○	○	○	○

5.8 In the 12 months prior to March 1, 2020, which of the following technologies were provided to students for their participation in learning activities at home by the school without charge? (select all that apply).

○ Internet dongles

○ Devices for students to take home

○ The school I worked at did not provide technologies for students to take home for participation in learning activities prior to March 1, 2020

○ Other _____

5.9 Were these provisions sufficient to meet the needs of students to participate in learning activities?

○ Yes

○ No

○ Don't know/can't say

○ Not applicable

○ Other _____

5.10 In the 12 months prior to March 1, 2020, please indicate whether students from the following groups in the school where you worked, had access to appropriate devices, adequate internet connection, and sufficient levels of digital literacy to participate in educational activities (note – more than one bubble can be selected in each row for evaluating all three categories shown):

VULNERABLE GROUP	ADEQUATE TECHNOLOGY DEVICES FOR LEARNING?			ADEQUATE INTERNET CONNECTIVITY FOR LEARNING?			ADEQUATE DIGITAL LITERACY FOR LEARNING?			
	YES	NO	DON'T KNOW/ CAN'T SAY	YES	NO	DON'T KNOW/ CAN'T SAY	YES	NO	DON'T KNOW/ CAN'T SAY	NOT APPLICABLE
Indigenous students	O	O	O	O	O	O	O	O	O	O
Students from non-English speaking or ESL households	O	O	O	O	O	O	O	O	O	O
Students with special learning needs	O	O	O	O	O	O	O	O	O	O
Students with physical disabilities	O	O	O	O	O	O	O	O	O	O
Students from lower socioeconomic backgrounds	O	O	O	O	O	O	O	O	O	O
Asylum seekers and/ or refugee students	O	O	O	O	O	O	O	O	O	O

Endnotes

1. Gottschalk & Weise (2023).
2. Department of Education (2023).
3. Reisdorf & Rhinesmith (2020).
4. Walton et al. (2013).
5. Helsper (2021).
6. Thomas et al. (2021).
7. The vulnerable groups: students from lower socioeconomic backgrounds, Indigenous students, asylum seeker/refugee students, students from a non-English or English as a second language background, students with special learning needs and students with physical disabilities.
8. The New South Wales Department of Planning's Metropolitan Strategy divides Greater Western Sydney into three sub-regions: North-West: City of Blacktown, City of Blue Mountains, City of Hawkesbury and City of Penrith. South-West: Camden Council, City of Campbelltown, City of Liverpool and Wollondilly Shire. West Central: Auburn Council, City of Bankstown, City of Fairfield, City of Holroyd and City of Parramatta.
9. NSW government schools are public schools operated by the NSW Department of Education, providing free or low-cost education.
10. Non-government schools in this report refer to both Catholic and Independent schools.
11. Digital inclusion broadly refers to access to digital resources, sufficient digital literacy and support required to participate in learning activities at home.
12. Based on a composite average of five variables measuring adequate access to digital devices, mobile, mobile Internet, broadband Internet, digital knowledge, technical support at home and special needs support. Cronbach's alpha was 0.77.
13. Regional NSW in this report refers to all areas of NSW outside of the Greater Sydney region.
14. Respondents were asked to self-identify if they were school leaders.
15. Parkinson et al. (2023).
16. Department of Education (2023); Helsper (2021).
17. Voogt & Knezek (2008); Dezuanni et al. (2023).
18. Tamborg et al. (2018).
19. Gottschalk & Weise (2023).
20. European Union (2020).
21. Buckley Flack et al. (2020).
22. UNICEF Australia (2020).
23. Boly Barry (2020).
24. Mudwari (2021).
25. Polydoros & Alasona (2021).
26. Australian Institute of Health and Welfare (2022).
27. C. M. D. Toquero (2020).
28. Boly Barry (2020).
29. Itaoui et al. (2023).
30. Thomas et al. (2023).
31. ABS (2022b).
32. NSW Telco Agency (2024).
33. Thomas et al. (2023).
34. Seymour et al. (2020).
35. Notley et al. (2024); Dezuanni et al. (2023).
36. This is to acknowledge the gaps and challenges members of certain groups can face without assuming they are inherently disadvantaged; see Long et al. (2017).
37. Thomas et al. (2023).
38. Thomas et al. (2023).
39. Helsper (2021).
40. Litchfield et al. (2021).
41. Reisdorf & Rhinesmith (2020).
42. Kelly & Satola (2023).
43. ADII (n.d.a)
44. Organisation for Economic Co-operation & Development (2001).
45. Blanchard et al. (2008); Helsper (2021).
46. Dulfer et al. (2022); Notley & Foth (2008).
47. ADII (n.d.a)
48. British Academy (2022).
49. Thomas et al. (2023).
50. Newman et al. (2010).
51. Park (2017)
52. Dezuani et al. (2023).
53. Australian Council of Social Service (2023).
54. SES status in this report refers to the ABS SEIFA quintiles for LGAs where quintile 5 is the most advantaged and quintile 1 is the least advantaged. It is defined as people's access to material and social resources and their ability to participate in society (ABS, 2016b).
55. Lamb et al. (2020).
56. Shergold et al. 2022.
57. NSW Department of Education (2021).
58. Thomas et al. (2023)
59. ADII (2023); National Indigenous Australians Agency (2023).
60. A study into First Nations digital inclusion in Western Sydney has begun at Western Sydney University, involving two of the authors of this report. See: https://www.westernsydney.edu.au/cws/media/first-nations-digital-inclusion.
61. NSW Department of Education (2023a).
62. Caluya et al. (2018).
63. Mudwari et al. (2021).
64. Caluya et al. (2018).
65. ABS (2021a).
66. ABS (2021a).
67. Owens et al. (2023); (2018); Notley et al. (2024).
68. ABS (2021a).
69. Smith & Basham (2014).
70. The Office of the eSafety Commissioner (2020).
71. NSW Department of Education (2023c).
72. Responses on students with physical disabilities were separated from students with special learning needs in the survey as students with physical disabilities may have different technological needs than students with a learning difficulty or other non-physical disabilities.
73. Thomas et al. (2023)
74. Australian Human Rights Commission (2021).
75. Shala & Grajcevci (2018); White Baker & Sibona (2022); Wenhong & Xiaoqian (2022); Reisdorf & Rhinesmith (2020).
76. Kim et al. (2018).
77. Helsper (2021).
78. Newhouse (2014); National Center for Education Statistics (2018).
79. Guenther et al. (2022); Gottschalk & Weise (2023).
80. Australian Curriculum, Assessment and Reporting Authority (2021).
81. Owens et al. (2023); Erdogdu & Erdogdu (2015); Rizhaupt et al. (2013).
82. Caluya et al. (2018); Drane et al. (2020).
83. Seymour et al. (2020).
84. Drane et al. (2020).
85. Pittman et al. (2008).
86. Helsper (2021).
87. Livingstone & Helsper (2007).
88. Helsper (2021).
89. Reisdorf & Rhinesmith (2020).
90. See Appendix A for further detail on the digital equity landscape in NSW schools.
91. Acknowledging there are differences between regional, rural and remote areas, for the sake of simplicity, regional NSW in this report refers to all areas of NSW outside of the Greater Sydney region.
92. Other' school types included working in combined primary and high schools (n = 24), specialist schools (n = 13), distance education (n = 3) and a senior high school only (n = 1).

93. Catholics Schools = 3%, Independent schools = 4.0%.

94. Those who chose 'other', mostly specified being student learning support officers, or people with more than one role.

95. Marshall (2023).

96. Ash et al. (2018); Atkinson et al. (2008); Itaoui et al. (2023); Shala & Grajcevci (2018); Stern et al. (2009).

97. Marks et al. (2022).

98. NSW Department of Education (2020).

99. Refers to the percentage of respondents who indicated they did not know based on composite averages of each category for all vulnerable groups.

100. Refers to the percentage of respondents who indicated they did not know based on composite averages of each category for all vulnerable groups.

101. Refers to the percentage of respondents who indicated they did not know based on composite averages of each category for all vulnerable groups.

102. Based on composite averages for each vulnerable group on all categories of access to devices, internet connectivity and digital literacy. Cronbach's alpha was all at or above 0.80 (Low-SES: 0.80; Indigenous: 0.80; Non-ESL: 0.829; Special needs: 0.833; Physical disability: 0.87; Asylum seekers/refugees: 0.845).

103. Dezuanni et al. (2023); Shergold et al. (2022).

104. Settlement Council of Australia & Good Things Foundation Australia (2020).

105. NSW Department of Education (2023d).

106. While this question was not worded the same as the ones on devices and connectivity for the six vulnerable groups, they all ask about the sufficiency or adequacy of technological provisions including devices and internet connectivity and are therefore comparable.

107. The 'other' answers were free-text, and were mostly made up of 'in-between' answers, such as 'yes and no', 'it depends' and 'sometimes'. There was no 'other' option for the six vulnerable groups.

108. Based on composite averages of each category. All reliability scores were 0.75 or above. The Cronbach's alpha scores for various categories reflect changes over three distinct time periods: before, during and after COVID-19. For individuals from lower socioeconomic backgrounds, the scores were 0.86 before, 0.75 during and 0.80 after. Asylum seekers and refugees had scores of 0.89, 0.85 and 0.85, respectively. Indigenous students recorded scores of 0.88 before, 0.82 during and 0.80 after. Those with special needs had scores of 0.89 before, 0.83 during and 0.83 after. Students with physical disabilities showed scores of 0.90 before, 0.86 during and 0.87 after. Finally, non-ESL students had scores of 0.91 before, 0.85 during and 0.83 after.

109. Australian Government (2023).

110. The 'other' options mostly extrapolated on what devices exactly were offered and for who. For example, laptops that could be borrowed and then paid off and devices for certain student groups such as those in higher grades, or for Aboriginal and Torres Strait Islander students.

111. Notley & Aziz (2024).

112. The digital connectivity index scores reproduced are 'On the Move' scores, which represent digital activities performed when people are out and about, using mobile connectivity on their phone or other mobile devices. For impact of limited connectivity see Parkinson et al (2023).

113. NSW Department of Planning and Environment.

114. ABS (2021b).

115. ABS (2021b).

116. Fair Work Ombudsman (n.d.).

117. Itaoui et al. (2023).

118. ABS (2021b).

119. ABS (2016a).

120. NSW Department of Education (2023d).

121. ABS (2021a).

122. Itaoui et al. (2023).

123. These scores are based on five questions, which asked NSW school staff if students had: sufficient technical support at home, access to an appropriate number of devices, a broadband internet connection, sufficient knowledge and skills to engage in digital learning, access to a mobile phone only (as opposed to a more appropriate device like a laptop or desktop computer).

124. Several factors may contribute to this disparity. Western Sydney tends to have larger-than-average family sizes, making it more challenging for each student to have their own device. Additionally, lower socioeconomic indicators in the region create barriers to acquiring the necessary devices for students (Notley et al., 2023)

125. The sample size for the rest of Sydney was smaller than from Western Sydney and regional NSW. However, the differences in response rates remain significant and require further investigation.

126. Helsper (2021).

127. Chrysanthos (2019).

128. 3% from Catholic Schools and 4% from Independent schools.

129. Preston (2020).

130. Parkinson et al. (2023).

131. Department of Education (2023); Helsper (2021).

132. Santos & Serpa (2017).

133. See Western Sydney University (n.d.).

134. See Universities Australia (2024).

135. Ministerial Council on Education, Employment, Training and Youth Affairs (1999).

136. Keane & Keane (2020).

137. Barr et al. (2008).

138. Rudd et al. (2007).

139. Fluck (2011).

140. NSW Government (2023f).

141. NSW Department of Education (2023g).

142. NSW Government (2023h).

143. Australian Government (2023a).

144. Rowland (2022).

145. Nikas-Boulos (2024).

146. Australian Communications Consumer Action Network (2022).

147. The Smith Family (2024); NSW Department of Education (2024a).

148. NSW Department of Education (2024a).

149. Notley et al. (2023).

150. ABS (2022a).

151. Catholic schools = 597, Independent Schools = 372

152. ABS (2022a).

153. Catholic school staff = 31,687; Independent school staff = 30,070.

154. ABS (2022a).

155. Catholic = 262,877, Independent = 187,913.

156. The final survey received SERAP approval (SERAP 2021027) and ethics approval from the University of Western Sydney (Ethics approval number H14219) in April 2023.

157. Facebook groups included: 'NSW Teachers', 'NSW Primary Teachers' and 'Teachers in NSW – Western Suburbs'.

158. Kim et al. (2018).

159. Melbourne Children's COVID Governance Committee (2022); Shergold et al. (2022).

160. Organisation for Economic Co-operation & Development (2018).

161. Itaoui, Balogh & Gerace (2023).

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