



SOCIOECONOMIC DISPARITIES IN AUSTRALIAN SCHOOLING DURING THE COVID-19 PANDEMIC

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About Pivot

Pivot Professional Learning (Pivot) is a leading educational company that provides insights on teaching practice for teachers, school leaders and the sector. From our headquarters in Melbourne, we provide practical and evidence-based support to schools and educators across Australia and New Zealand. Our support programs and systems aim to enhance teaching – primarily by harnessing the power of students’ voices. Our work is supported by international research and data from over 65,000 Australian classrooms.

Our flagship Student Perception Survey on Teaching Effectiveness provides teachers and schools with reliable, timely and detailed feedback to guide responsive teaching. Pivot’s reports are clear, incisive and easy to digest. Our research-based insights support continuous improvement in classrooms across the country.

Over a number of years, Pivot has partnered with major educational organisations and agencies including:

- Australian Association of Mathematics Teachers (AAMT)
- Bastow Institute for Educational Research, Department of Education and Training, Victoria
- Professional Learning Communities, Department of Education and Training, Victoria
- Centre for Education Statistics and Evaluation (CESE), Department of Education, NSW

About Education Perfect

Education Perfect (EP) is a leading digital education platform, providing transformative online teaching and learning experiences for more than 1.2 million students in over 4000 schools across 80 different countries. We have offices in Australia, New Zealand and Singapore. The company has been supporting schools and teachers across the world during the disruption and closures due to the COVID-19 pandemic, and has joined Pivot in producing this research project to provide invaluable feedback to school and teaching communities.

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Executive summary

Background

In early April 2020, at the height of the COVID-19 emergency, more than 3,000 teachers across Australia and New Zealand took part in a survey focusing on their experiences with distance learning during school closures. The survey, conducted by Melbourne-based consultancy Pivot Professional Learning in collaboration with Education Perfect, revealed widespread concern among teachers about the welfare of students after the shift to online learning. Teachers across all school types – primary and secondary; government, religiously-affiliated and independent – provided worrying insights about the new realities and challenges of distance teaching and learning.

While problems were apparent across all sectors, the results suggested less advantaged students – particularly students from low-income backgrounds, students living in remote areas, Indigenous students, students with disabilities and students learning English as a new language – might be the worst affected, particularly through lack of access to technology and reliable internet connectivity.

To further investigate these equity concerns, the researchers conducted a detailed statistical analysis of the Australian survey data to identify differences between teacher responses corresponding to the average socioeconomic status of their school communities, as measured by Australia's Index of Community Socio-Educational Advantage (ICSEA). The analysis divided respondents into four categories of relative socio-educational advantage using their school's 2018 ICSEA score.

The results, presented in this report, provide strong evidence that children attending the least advantaged schools were more adversely affected by the shift to online learning than others and that the shift therefore may have compounded existing inequities in the school system. By extension, the results suggest education authorities face a major challenge to ensure that adverse effects from future shifts to online learning do not disproportionately fall upon Australia's most marginalised children and communities.

Main findings

The analysis revealed that schools' ICSEA rankings were a key factor in how teachers experienced the shift to distance teaching. Teachers in schools with lower-ICSEA scores were:

- Almost four times as likely to be worried about students' lack of access to remote learning technology and the Internet (59.1%) as those in the highest-ICSEA category (16.5%).
- Twice as likely to be concerned about children lacking support from a parent or guardian (43.6%) during distance learning. This may be due in part to occupational constraints on some lower-paid people who may have less opportunity to work from home.
- More than five times as likely to fear students lacking access to basic needs (23.8%).

The analysis also revealed:

- More than 20% of teachers in the least advantaged schools believed their schools were not well-positioned to transition to online instruction (compared with 5.9% in the most advantaged category).
- Fewer than half of teachers in the least advantaged schools said they were able to communicate effectively with their students online – compared with 76% in the most advantaged category.
- Teachers in schools serving the most marginalised populations were significantly less likely to be confident about using technology for instruction than those in more advantaged schools.
- Teachers in the least advantaged schools were significantly more likely to say they needed extra professional support for online learning than those in more affluent settings.

- While a large majority of educators from all school categories agreed that students would need extra instructional support once they returned to campuses, those working in the least advantaged communities were most concerned about this issue.

The results suggest that educators working in less advantaged communities have distinct concerns and require targeted supports. In recognition of this, we have developed a series of actionable policy recommendations.

Recommendations

The return to face-to-face teaching in schools after the initial COVID-19 emergency does not signal the end of widespread distance learning in Australia; on the contrary, it is expected schools will increasingly, if selectively, embrace it into the future. More immediately, the recent rebound in COVID-19 cases, notably in Victoria, has added to the likelihood of further intermittent school closures – and temporary reversions to full online learning. We therefore believe it is imperative that governments and education authorities urgently address the issues raised in this report. Our proposals cover three areas of concern.

1. To prepare for potential school closures, we recommend that education leaders and policymakers:

- Design a plan that prioritises reaching and meeting the needs of all students – particularly those with limited access to technology – at short notice. For example, schools could prepare hard-copy packets of work, text-based learning plans, device sharing frameworks and/or boxes of materials for hands-on activities.
- Support the basic needs of students and families in low-income areas. Providing meals for children who rely on school nutrition programs is essential.
- Address potential learning loss amongst children, especially those with disabilities. Response plans should include provisions for periodically assessing pupils for learning loss and mechanisms for providing extra instructional support under a variety of schooling formats.
- Conduct further research on the impact of COVID-19 now that students are back in the classroom to identify what worked and did not work for teachers, students and families.

2. To improve digital access and inclusion for lower-ICSEA schools and communities, we recommend:

- Additional funding for low-ICSEA schools to provide suitable technology and internet access to students.
- Provision of high-quality instructional technologies and resources to less advantaged schools.
- Provision of additional training for students in economically vulnerable communities to enhance their comfort and proficiency with technology.
- Development of resources for culturally-responsive practices in online teaching, particularly for Aboriginal and Torres Strait Islander communities and students learning English as a new language.

3. To improve the proficiency and confidence of teachers in the online environment, we recommend:

- Training in trauma-informed educational practices to help teachers support children suffering social isolation and other issues connected to distance learning.
- Upskilling of teachers in the proficient use of instructional technologies.
- Expansion of professional learning in digital pedagogy.
- Integration of digital pedagogy and instructional technology into teacher training courses to prepare the next generation of teachers working in Australian schools.

Introduction

The COVID-19 pandemic led to a rapid shift to distance learning across Australia. Starting in March 2020, more than 4 million students commenced learning at home, for periods of time ranging from just a few weeks to over two months. As a result, teaching and learning underwent major and unprecedented changes. In April 2020, Pivot and Education Perfect (EP) partnered to administer a survey to over 3,500 educators across Australia and New Zealand to gather actionable data that could foster insight into the impact of the transition to distance education on teaching and learning.

Pivot's analysis revealed that educators had strong concerns about the equity implications of school closures (Flack, Walker, Bickerstaff, Earle, & Margetts, 2020). Nearly half of all respondents listed students' access to technology and internet among their top concerns about the transition to distance teaching. Educators' open-ended responses suggested that this concern was not evenly distributed across school communities. Themes emerging from the qualitative data included worries about the potential disruption of schooling for low-income students, students living in remote areas, Indigenous students, students with disabilities, and students learning English as a new language. Issues of equity suggested by the data went beyond disparities in technological access. Many educators viewed their relationships with marginalised students as vital to their scholastic engagement and reported struggling to maintain these key relationships from a distance.

Given these findings and recent work suggesting that distance teaching may worsen existing educational inequalities (Brown et al., 2020; Clinton, 2020; Doyle, 2020; Drane et al. 2020; Duffy & Kent, 2020; Education Endowment Fund, 2020; Markham, Smith, & Morphy, 2020), Pivot embarked upon a secondary analysis in order to better understand the role of socioeconomic factors in how teachers and students have experienced teaching and learning during the pandemic. Focusing on Australia, we sought to understand how educators' needs and concerns varied with the average socioeconomic status (SES) of their school's students. Analysis of data gathered from over 2,100 Australian educators revealed clear areas of commonality and major areas of difference in their responses associated with the average socioeconomic status of their students. Results pointed to multiple ways in which policymakers may be able to provide targeted support to educators and schools that will help them best serve their students.

These findings are particularly urgent given the likelihood that ongoing outbreaks and intermittent school closures will continue until a COVID-19 vaccine is widely available. Using data from 16 countries, including Australia, epidemiologists have suggested that rolling periods of lockdown measures may be necessary for up to 18 months (i.e., until November 2021) in order to prevent overwhelming hospital intensive care units (Chowdhury et al., 2020; Ferguson et al., 2020). Therefore, it is important for policymakers to ready the Australian educational system for various contingencies with an eye toward increasing equity.

Equity in the Australian school system

The Australian school system has been characterised by equity gaps for decades (Gonski et al., 2011). There are gaps in both school resource levels and student outcomes (Cassells et al., 2017). Research has found a persistent link between the socioeconomic status of Australian students' families, their academic performance, their matriculation into higher education and their transitions to the labour market (Australian Council for Educational Research (ACER), 2020; Bonnor & Shepherd, 2016; Cassells et al., 2017; Council of Australian Governments (COAG) Reform Council, 2013; Department of Education, Employment and Workplace Relations, 2008; Goss et al., 2016; Perry & McConney, 2010). These types of associations are also found in many other developed countries (Bonnor & Shepherd, 2016; Sirin, 2005), but are more pronounced in Australia than the average across countries that belong to the Organisation for Economic Co-operation and Development (OECD) (Thomson, De Bortoli, & Buckley, 2013). In Australia, the socioeconomic profile of a student's school is also pertinent to academic performance, regardless of the individual family's socioeconomic status (Perry & McConney, 2010). These associations contribute to disparities in outcomes related to geography and ethnicity. There are significant differences in standardised test achievement between students in remote versus metropolitan areas (Australian Council for Educational Research (ACER), 2020; Goss et al., 2016; Thomson, De Bortoli, Nicholas, Hillman, & Buckley, 2011) and between Indigenous and non-Indigenous students (ACER, 2020; COAG Reform Council, 2013; Holmes-Smith, 2006; Markham, Smith, & Morphy, 2020).

School sectoral differences

There are three main sectors in the Australian educational system: the independent sector, the private Catholic sector and the government sector. Australia's non-governmental schools enrolled 34.4% of primary and secondary students in 2020 (Department of Education, Skills and Employment, 2020). Of these, approximately one-third are independent schools, which comprised 11.4% of the overall school system in 2018 (Australian Curriculum Assessment and Reporting Authority [ACARA], 2020b). Thus, the majority of non-government schools have a religious affiliation.

For a variety of reasons, Australian students of various socioeconomic backgrounds are not evenly distributed across school sectors. Of the three main sectors, the independent sector enrolls the most advantaged students, followed by the Catholic sector; on average, government schools enrol the least advantaged students (Bonnor & Shepherd, 2016). There are parallel patterns in students' National Assessment Program – Literacy and Numeracy (NAPLAN) performance. Independent and Catholic students have higher average NAPLAN scores; however, after adjusting for differences in socioeconomic background, differences in student growth are “very modest,” suggesting that instructional quality is similar across sectors (Goss & Emslie, 2018).

Similarly, the per pupil funding (from a combination of public and private sources) available to schools is strongly linked to their sector (Bonnor & Shepherd, 2016). Overall, total government expenditures (combining funding from the national government with that from state and territory governments) are higher per pupil in government schools (Department of Education, Skills and Employment, 2020).

However, per pupil funding at the school level also includes monies from fundraising and school fees, with approximately 5% of government school funding, 25% of Catholic school funding, and 50% of independent school funding coming from private sources (Department of Education, Skills and Employment, 2020). As a result, independent schools have the highest average per pupil income (ACARA, 2020b).

The Index of Community Socio-Educational Advantage (ICSEA) for Australian schools

Created by the Australian Curriculum, Assessment and Reporting Authority (ACARA), Index of Community Socio-Educational Advantage (ICSEA) scores for schools were designed to enable fair comparisons of NAPLAN test achievement (ACARA, 2020a). This measure is used to assess equity by comparing differences in student performance among similar schools (Gannon & Sawyer, 2014). The 2020 calculation of ICSEA follows the formula: $ICSEA = SEA (direct) + Remoteness + Per\ cent\ Indigenous$. The Socio-Educational Advantage (SEA) component of the ICSEA score is derived directly from information in student enrolment records, such as parental occupation and educational level. These metrics (i.e., ethnicity, geographic location, occupation, education) are frequently included in indices of socioeconomic status created by social scientists who study equality of educational opportunity (Sirin, 2005).

ICSEA values are calculated on a scale designed to have a median of 1000. ICSEA values typically range from approximately 500 (representing schools in the least advantaged communities) to about 1300 (representing schools in the most advantaged communities). The distribution of ICSEA scores across Australia has become more polarised in recent years as more affluent families at lower-ICSEA schools have begun enrolling their children in schools with higher-ICSEA scores, in part through migration and in part through taking advantage of school choice policies (Bonnor & Shepherd, 2016). This shift has been gradually increasing the concentration of students with low socioeconomic backgrounds in certain schools, which may negatively impact academic outcomes (Gonski et al., 2011). Performance gaps between demographic groups also widened between 2007 and 2012 (COAG Reform Council, 2013).

It is important to note that an ICSEA value is not a rating of a school's institutional quality (e.g., the efficacy of its staff or teaching programs) nor is it a score representing a school's overall student standardised testing performance (Riddle, 2017). While ICSEA scores are not school ratings, there are well-researched relationships between ICSEA and teacher-level factors. Schools with low-ICSEA scores have a disproportionately inexperienced teacher workforce and higher rates of teacher turnover and burnout (Gannon & Sawyer, 2014; Pierce and Molloy, 1990). With respect to student-level factors, lower-ICSEA scores are associated with lower attendance and academic achievement (Chesters, 2019; Bonnor & Shepherd, 2016; Ladwig & Luke, 2014). These findings mirror those in the broader literature on the link between family socioeconomic status and educational outcomes in Australia, suggesting that ICSEA is a reasonable proxy for the average socioeconomic status of a school's student body.

Study methods

Pivot developed an online survey to ascertain educators' perceptions of distance learning during the COVID-19 pandemic. Education Perfect (EP) then distributed the survey to 60,000 contacts and through social media. The survey was open for five days, from 9-13 April 2020. All respondents had the opportunity to enter a random drawing for one of five \$500 GiftPay vouchers.

The full survey consisted of 46 items, including 44 multiple-choice and multi-select items, as well as two open-ended items. Respondents answered between 26 and 34 multiple choice questions depending on their role within schools. All respondents answered one open-ended question. The survey first asked respondents for background information, including their position, level of education, years of teaching experience and access to technology at home. The survey also collected information about respondents' schools, including location, school type and participation in distance learning. The remainder of the survey covered four areas: use of instructional technology; shifting to online learning; perceptions of students' needs; and necessary support and feedback. For a more in-depth discussion of the instrument, see Flack et al. (2020).

Sample

For this analysis, only respondents from Australia who provided identifiable school names were included. The resulting sample size was 2,171 primary and secondary educators from each state and territory in Australia, which represented approximately 0.8% of all teachers in Australia (ACARA, 2020b). The respondents represented 1,155 schools, covering 10.9% of all registered schools in Australia (ACARA, 2020). Each school was matched with its corresponding 2018 ICSEA score and placed into a quartile based on the range of scores in the sample. Table 1 below shows the distribution of sample respondents and their schools by ICSEA quartile.

Table 1. Distribution of sample respondents and their schools by sample ICSEA quartile

	Lower-ICSEA	Higher-ICSEA	# Educators	# Schools
Quartile 1	579	984	560 (25.8%)	330 (28.6%)
Quartile 2	985	1035	529 (24.4%)	279 (24.2%)
Quartile 3	1036	1092	539 (24.8%)	277 (24.0%)
Quartile 4	1093	1286	543 (25.0%)	269 (23.3%)

Note. Q1 represents the lowest-ICSEA range (relative disadvantage) while Q4 represents the highest-ICSEA range (relative advantage).

Our sample's ICSEA median of 1,035 was higher than the 2019 Australian national median ICSEA of 1,010; similarly, the range of ICSEA scores in our first quartile (579 to 984) were higher than that of schools across Australia in 2019 (100 to 957) (ACARA, 2020c). This indicates that our sample somewhat over-represented educators in affluent communities, but in 2019, only 36 of the over 9,000 schools in Australia had an ICSEA score lower than 579. Thus, our lowest quartile was still fairly similar to low-ICSEA schools across the Commonwealth of Australia.

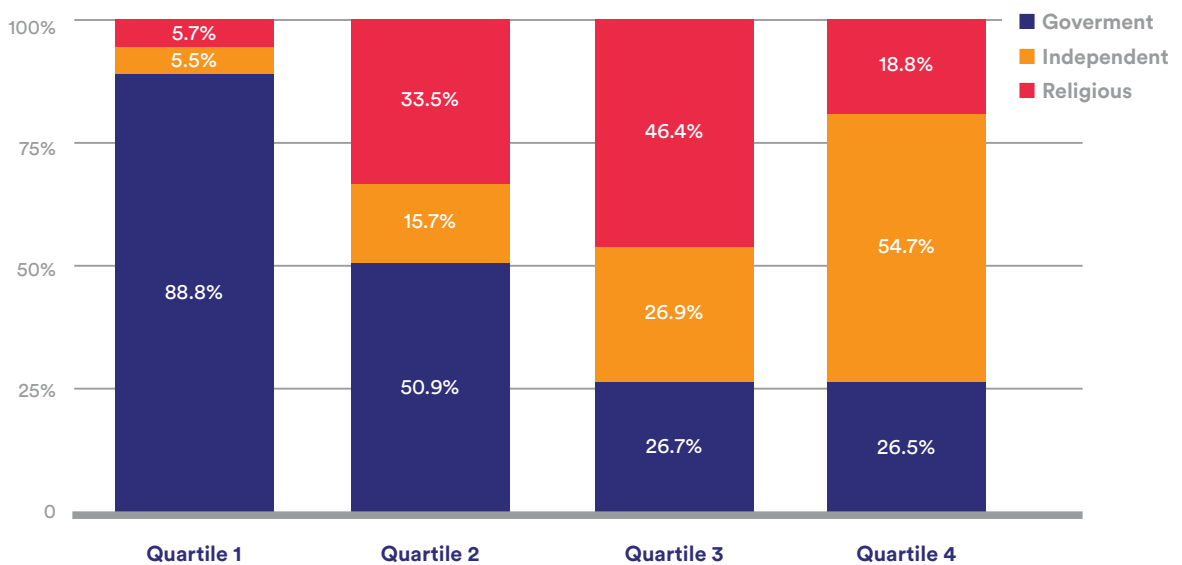
Our survey asked respondents to identify their school's type as government, independent or religiously affiliated. Table 2 below shows the distribution of sample respondents and their schools across these categories. Although the majority of schools in the religious group appeared to have a Catholic affiliation (based on school name), there were schools with other religious affiliations in our sample. Therefore, we refer to this group as religious. These non-Catholic religious schools are part of the independent sector in Australia. Thus, although the three groups in our sample align fairly closely with Australia's three educational sectors, there are slight differences. For this reason, we refer to our sample groups as school types throughout the paper.

Table 2. Distribution of sample respondents and their schools across school types

	# Educators	# Schools
Government	1054 (48.5%)	597 (51.7%)
Religious	556 (25.6%)	289 (25%)
Independent	561 (25.8%)	269 (23.3%)

As seen in Figure 1 below, sample schools of each type were not evenly distributed across ICSEA quartiles. Government schools were more concentrated in the lower quartiles, while non-government schools comprised the majority in the upper quartiles. This reflects a broader pattern across Australia, in which independent and Catholic schools serve more advantaged populations on average (Gonski et al., 2011). Due to this relationship, educators from government schools were slightly under-represented in our sample. Overall, as shown in Table 2 above, 48.5% of respondents ($n = 1054$) worked in government schools. For comparison, 64.3% of Australia’s full-time equivalent teaching staff worked in the government sector in 2018 (ACARA, 2020b).

Figure 1. Distribution of school type by ICSEA quartile



Note. Quartile 1 ($n = 560$), Quartile 2 ($n = 529$), Quartile 3 ($n = 539$), Quartile 4 ($n = 543$)

In addition, a higher proportion of teachers with five or fewer years of experience in our sample worked in low-ICSEA schools (29.8% of Quartile 1 teachers compared to 23.0%, 17.0% and 13.3% in Quartiles 2 to 4), again echoing broader patterns across Australia (Gannon & Sawyer, 2014). At the time of survey administration, 93% of respondents had already begun teaching online in response to COVID-19 ($n = 1,446$) or were preparing to move instruction online ($n = 592$).

Data analysis

Tables of frequencies and percentages, cross-tabulations and bar graphs were used to examine the categorical variables derived from the multiple-choice and multi-select survey items. A Generalised Cochran-Mantel-Haenszel Stratified Test of Association (CMH test) was used to test the statistical significance of the relationships between the ICSEA quartiles and other categorical variables (Agresti, 2013; Rayner & Rippon, 2018). By using school type as the stratifying variable, we accounted for the disproportionate concentration of religious and independent schools in the upper-ICSEA quartiles of our sample. Thus, the test controlled for the possibility that school attributes related to their type were driving observed associations in the data.

Although this test has traditionally been used for two-way tables (i.e., binary variables), recent extensions to the test allow for the analysis of large tables, the correct treatment of ordinal data and the ability to control for a third stratifying factor (Rayner & Rippon, 2018). For this analysis, ordinal variable models were used for the quartiles and all other ordinal categorical variables. Additionally, log-linear models were used to test for homogeneity of association (Agresti, 2013); that is, whether the relationship between ICSEA quartiles and a given variable was varying by school type. A non-significant result for this test meant that there was no evidence that patterns of association among educator responses and the ICSEA quartile of their school differed between respondents from government, independent or religious schools. In order to ease interpretability for a non-technical audience, test statistics are located in the footnotes.¹

In addition, we analysed the qualitative data from the two open-response items using an iterative, thematic coding process (Corbin & Strauss, 2008; Saldaña, 2009). Families of emergent codes included responses related to changes in pedagogy, concerns about equity, access to technology, student well-being and changes in teachers' workloads.

Key findings

The rapid shift to distance learning brought major disruptions and changed the ways in which schools operated, teachers taught and students learned (Flack et al., 2020). Our analysis examining how changing conditions were associated with school ICSEA level revealed some areas of consensus and many areas of difference. Our key findings fell into four broad categories: educators' concerns about their students; teaching and technology; ability to communicate and engage students and families; and supporting educators to teach effectively online.

Educators' concerns about their students

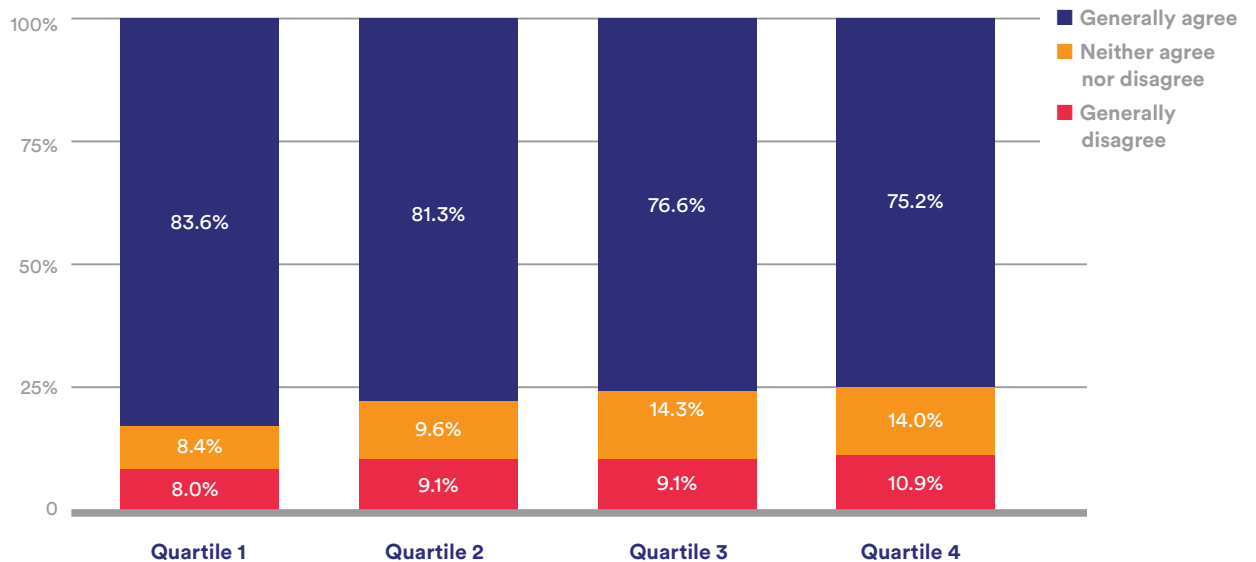
The educators in our sample had many concerns about their students' lives that transcended the mechanics of teaching and learning. The ICSEA analysis demonstrated that some of these concerns varied considerably with the socioeconomic status of the schools in which respondents worked.

Educators at all ICSEA levels believed students would need extra instructional support upon returning to campus, but those working in the least advantaged schools were significantly more concerned.

Educators working in schools of all socioeconomic levels shared concern about learning loss. The survey asked teachers to indicate the extent to which they agreed or disagreed that students would need extra instructional support when they returned to the physical classroom. Overall, as shown in Figure 2 below, levels of general agreement were high, ranging from 83.6% among Quartile 1 teachers ($n = 475$) to 75.2% among Quartile 4 teachers ($n = 487$).

¹ χ^2_{MH} refers to the CMH tests; $\chi^2_{Deviance}$ refers to the tests for homogeneity of association.

Figure 2. Agreement that student will need extra instructional support by ICSEA level



Notes. Quartile 1 ($n = 475$), Quartile 2 ($n = 382$), Quartile 3 ($n = 363$), Quartile 4 ($n = 4366$); Five-point Likert scale collapsed into three categories for the purposes of visual clarity (e.g., “Strongly disagree” and “Disagree” collapsed into “Generally disagree”).

Although the survey data showed that a large majority of educators from schools of all ICSEA levels agreed that students would need extra instructional support once they returned to campus, those working in the least advantaged school communities were most concerned. When we tested for an association between responses and ICSEA level, whilst controlling for school type, the results were significant.² The largest difference was in the “Strongly agree” category, with 22.5% of Quartile 1 teachers strongly agreeing, compared to 12-16% in the other ICSEA levels. This pattern did not differ in a statistically significant way among the school types.³ This means that for the government, independent and religious schools in our sample, teachers at less affluent schools were more likely to agree that their students would need extra support than teachers in more advantaged areas.

This finding is not surprising, as many families who attend Quartile 1 schools were already experiencing insecure employment or income prior to the pandemic, and they are likely to have been most hard hit by job losses, food insecurity and other difficulties associated with disruptions in academic instruction (Noble et al., 2020). Indigenous communities in particular may be experiencing COVID-19 crisis-related job loss at disproportionate rates (Markham et al., 2020). In general, the pattern of job losses across Australia’s economy suggests that the losses will widen income inequality (Nolan, 2020). This will likely have negative consequences for the food and housing security of young people in low-income communities and communities of Indigenous Australians (Hunter, 2009; Westbury & Dillon, 2019).

² $\chi^2_{MH}(1, N = 1903) = 4.5, p = .033$

³ $\chi^2_{Deviance}(36) = 34.2, p = .556$

Educators working in the least and most advantaged schools in our sample had different, but overlapping, sets of priorities.

Pivot asked educators about their top three concerns for their students during distance teaching due to the COVID-19 pandemic. Table 3 below shows their educators’ responses by ICSEA level. Notably, the proportion of teachers in Quartile 1 schools who were concerned about their students’ lack of access to basic needs (24% | $n = 125$) was nearly five times higher than the proportion of Quartile 4 teachers concerned about the same (5% | $n = 24$).

Table 3. Concerns about students by ICSEA quartile

	Quartile 1	Quartile 2	Quartile 3	Quartile 4
A decrease in student well-being	49.1%	53.3%	54.0%	63.0%
Disruption in meeting learning targets (e.g., VCE, ATAR, etc.)	25.0%	28.4%	35.0%	37.6%
Lack of access to technology/internet	59.1%	42.5%	28.6%	16.5%
Lack of support from a parent or guardian	43.6%	41.8%	34.8%	23.4%
Lack of access to basic needs	23.8%	12.9%	7.2%	4.6%
Learning loss	43.1%	44.7%	50.5%	46.6%
Social isolation	38.9%	51.9%	59.1%	72.7%

Note. Quartile 1 ($n = 525$), Quartile 2 ($n = 503$), Quartile 3 ($n = 511$), Quartile 4 ($n = 521$)

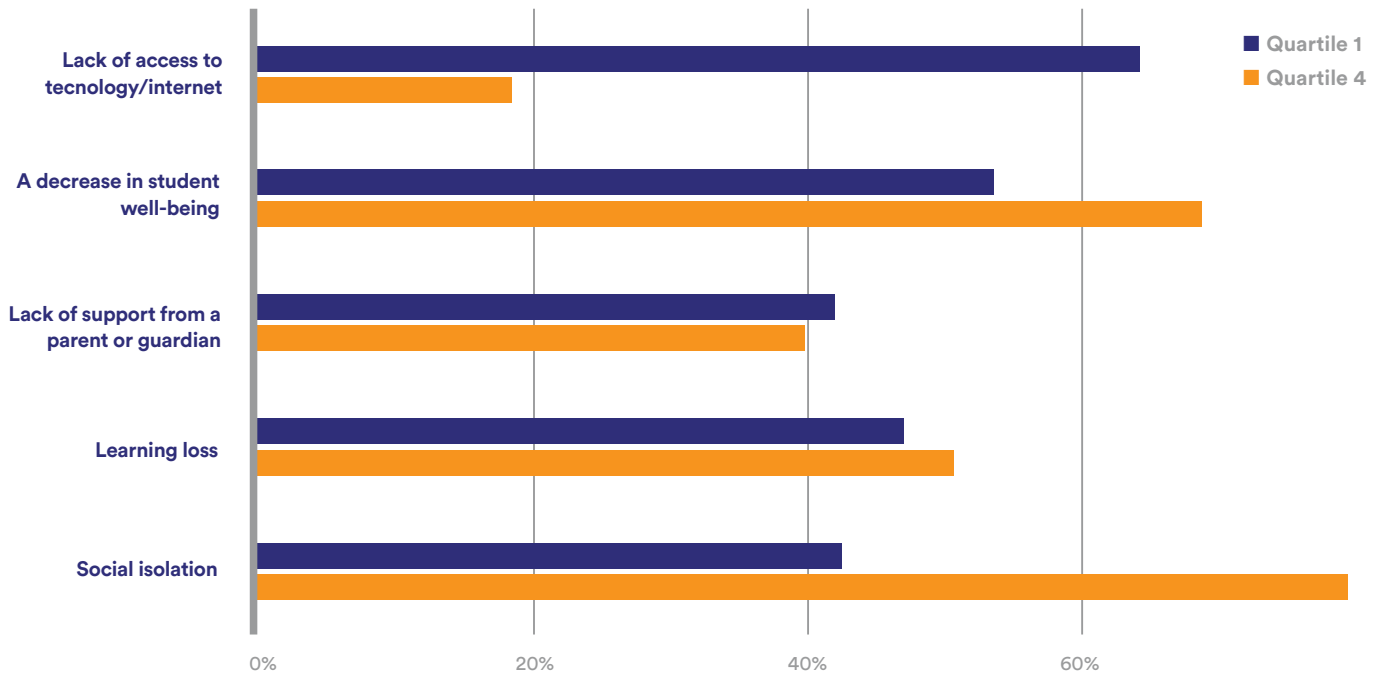
Educators working in the least and most advantaged schools in our sample had different, but overlapping, sets of priorities. Figure 3 below displays the top concerns of Quartile 1 and 4 educators. The top concerns of educators working in Quartile 4 schools were social isolation of students (72.7% | $n = 379$), a decrease in student well-being (63.0% | $n = 328$) and learning loss (46.6% | $n = 243$). The latter two concerns, decrease in student well-being and learning loss, were among the top three concerns of educators across all four ICSEA quartiles.

Concerns about student well-being were prevalent among educators from schools of all ICSEA levels.

Concern for student well-being was also one of the most prominent themes in the qualitative data, with educators from schools of all ICSEA levels reflecting on its importance as a foundation for learning. For example, a primary teacher from a Quartile 4 school in New South Wales said, “Students need a greater focus on well-being and connection. Without this support, even if our programs are excellent, students will not engage.” Many other respondents echoed this belief that schools needed to focus on well-being. As another primary teacher who worked in a Quartile 2 school said, “Prioritise play, motivation and engagement.”

Educators’ cross-cutting concerns about well-being are important to note. COVID-19 has precipitated a global health crisis unlike any seen since the 1918 Spanish Flu pandemic. Although the current situation is unique, previous research on children and schooling in the wake of natural disasters or armed conflicts may be instructive in helping educators, sector leaders and policymakers prepare for the potential consequences on student well-being (Clinton, 2020). It is reasonable to expect a social-emotional impact on students ranging from feelings of isolation to more pronounced symptoms of

Figure 3. Top concerns about students, least versus most advantaged schools



Note. Quartile 1 (n = 525), Quartile 4 (n = 521)

psychological stress and trauma (Blanc et al., 2015; Osofsky et al., 2007).

Access to technology and the Internet was the most frequent concern of educators working in the least advantaged schools.

As shown in Figure 3 above, the top concern for educators at Quartile 1 schools was students’ lack of access to technology/internet (59.1% | n = 310). These concerns were not surprising given that approximately 15% of Australian families do not have access to the Internet, and families in remote areas (whose concentration in a school community lowers its ICSEA score) are less likely to have Internet access than families in other areas (Australian Bureau of Statistics, 2018). In some remote, low-income communities, fewer than 40% of households are connected to the Internet (Drane et al., 2020). This is of particular concern because the academic performance of Australian students living in remote areas is already disproportionately lower compared to that of students in more developed areas (Thomson et al., 2011).

Concerns about lack of access to devices and the Internet came through strongly in the qualitative comments as well. For example, a teacher at a Quartile 1 primary school in New South Wales said, “We still have to get [physical] work packs ready... as about half our families do not have any or satisfactory internet services, devices or skills to assist their students.” A secondary humanities teacher from a Quartile 1 school in Queensland echoed this, saying, “We need enough devices for low socioeconomic students. [Distance teaching] is widening the gap, especially for Indigenous families.

The poor get poorer, and the rich get richer unless this is addressed.”

Educators in the least advantaged schools worried that families’ socioeconomic status placed constraints on their availability to support students with distance learning.

Among educators at Quartile 1 schools, the declining well-being of students (49.1% | $n = 258$) was the second most common worry. Concerns about learning loss (43.6% | $n = 229$) and the availability of family members to support learning at home (43.6% | $n = 210$) were third and fourth most commonly chosen (see Figure 3 above). With respect to interpreting this latter concern, it is critical to note that there is no empirical evidence that families whose children attend lower-ICSEA schools value education less than families in more advantaged school communities. Rather, families with lower income levels face myriad constraints on their availability to support their children’s distance learning. Some educators demonstrated their understanding of this in their open-ended responses. As one science teacher at a Quartile 1 school in New South Wales reflected, “Many parents have multiple students in the school and struggle to support their kids in online learning or don’t have the resources to do so.”

In terms of resource constraints, families of lower socioeconomic status are likely less able to afford in-home childcare and less often able to work from home during school closures (Noble, Hurley, & Macklin, 2020). In addition, many people working in lower-paying occupations are essential workers (e.g., medical assistants, sanitation workers, transit workers, food service workers, elder care givers, domestic workers, etc.). These factors may limit the amount of time adults in a household have available for supporting remote learning. A lack of physical space for a study area and parent/guardian educational level are other potential constraints (Doyle, 2020). In addition, as several respondents mentioned in their comments, parents and caregivers in these families may need additional upskilling in the use of instructional technology.

Teaching and technology

Fluency with teaching technology is a core competency for both effective distance teaching and the facilitation of blended learning (Pulham & Graham, 2018; Quality Matters & The Virtual Learning Leadership Alliance, 2019). Previous research has shown that a teacher’s lack of proficiency in the use of educational technologies can be a barrier to effective online instruction (Valentine, 2002; Yang & Cornelious, 2005). In our analysis of the Pivot survey data, we examined how technology use varied with the ICSEA level of respondents’ schools. Results showed that schools across the socioeconomic spectrum used a similar number of tools. However, teachers in less advantaged areas were less likely to agree that their schools were ready to transition to online instruction and expressed lower levels of confidence in teaching with technology.

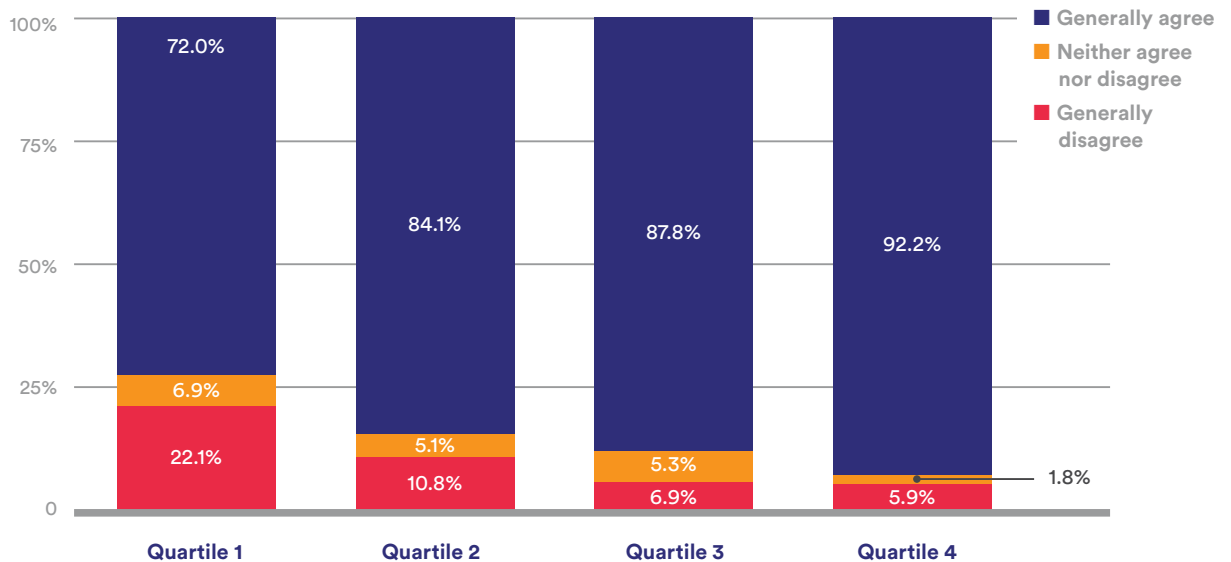
Teachers in low ICSEA schools were significantly less likely to agree that their schools were ready to shift to online teaching.

Pivot’s survey asked teachers to indicate the extent to which they agreed or disagreed that their school was well-positioned to transition to online learning using a seven-point Likert scale. As Figure 4 below illustrates, the proportion of teachers who generally agreed that their schools were well-positioned to transition to online instruction was progressively larger in the higher-ICSEA groups. The association between school ICSEA level and teachers’ beliefs about their schools’ readiness to teach online was statistically significant, even when controlling for school type.⁴ However, this association varied among types of schools,⁵ with religious schools having higher than average levels

⁴ $\chi^2_{MH} (1, N = 1914) = 52.7, p < .001$

⁵ $\chi^2_{Deviance} (36) = 65.6, p < .001$

Figure 4. School well-positioned to transition to online learning by ICSEA quartile



Notes. Quartile 1 ($n = 475$), Quartile 2 ($n = 473$), Quartile 3 ($n = 476$), Quartile 4 ($n = 490$); Seven-point Likert scale collapsed into three categories for the purposes of visual clarity (e.g., “Strongly disagree,” “Disagree,” and “Somewhat disagree” collapsed into “Generally disagree”).

of agreement across all ICSEA levels and government schools having lower than average levels of agreement.

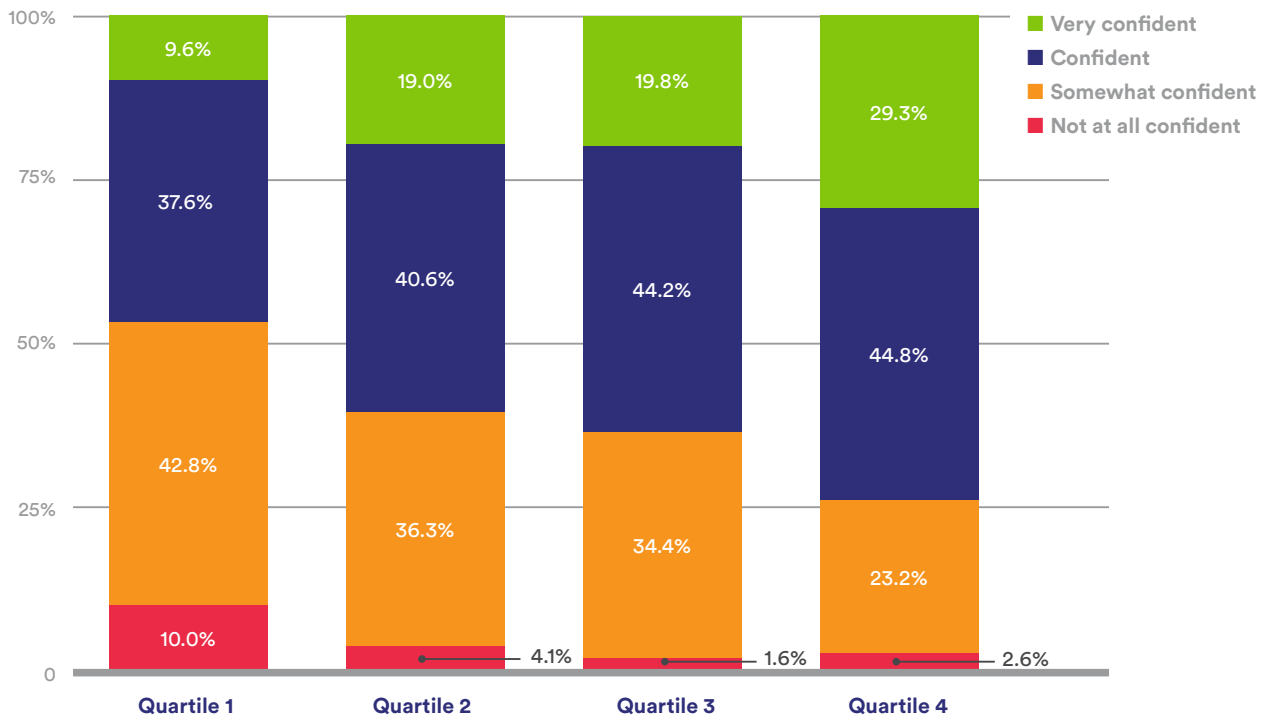
Overall, the levels of agreement shown in Figure 4 were higher than expected given the difficult circumstances of the pandemic. Educators have rapidly adapted to this new paradigm while managing their own challenges, including stress, isolation, illness and caring for family members (Bacon, 2020; Gorman, 2020). Nonetheless, preliminary evidence suggests they have risen to the challenge admirably (Baker, 2020; Duffy & Kent, 2020). As a leading teacher from a Quartile 2 primary school in Victoria reflected, “It has been a rapid succession to remote learning, and I think teachers have taken this in their stride incredibly, in such uncertain times.”

Nonetheless, it is important to note that 21.1% of teachers ($n = 100$) in Quartile 1 schools did not agree that their schools were ready for the transition to online learning. Across all teachers, 12% ($n = 223$) disagreed. Although our data were not strictly representative, the analysis suggests that teachers serving a sizeable number of Australian students did not feel their schools were prepared to move instruction online. This is understandable, but preventable in the future, if policymakers and sector leaders commit time now toward developing school readiness plans for potential contingencies and allocate resources for assisting schools in enhancing readiness.

Teachers in low-ICSEA schools were less confident in their schools’ ability to support students’ learning online.

Similarly, respondents teaching in lower-ICSEA schools were less confident in their schools’ ability to support students’ learning online than their counterparts working in higher-ICSEA schools. Teachers rated their confidence using a four-level response scale (i.e., “Not at all confident,” “Somewhat confident,” “Confident,” and “Very confident”). As shown in Figure 5 below, teachers’ reported confidence progressively increased with school ICSEA level.

Figure 5. Confidence in school’s ability to support students’ online learning by ICSEA quartile



Note. Quartile 1 (n = 418), Quartile 2 (n = 399), Quartile 3 (n = 389), Quartile 4 (n = 420)

This association contributed to starkly contrasting levels of confidence across teachers serving schools with different ICSEA levels. For example, more than half (53% | n = 221) of teachers in Quartile 1 schools were “Not at all” or “Somewhat confident” in their school’s ability to support students’ online learning compared to 26% (n = 109) of teachers in Quartile 4 schools. This association was statistically significant, even after controlling for school type.⁶ Within each type of school (i.e., government, religious and independent) teachers from less affluent schools were less confident than their peers working in more advantaged communities.⁷

Teachers in low-ICSEA schools reported lower levels of confidence in teaching using instructional technology.

We also asked a series of questions about the respondents’ schools’ primary instructional technology. When asked about their confidence in teaching using their primary technology (using a four-level scale) there were significant differences based on ICSEA level. Table 4 below displays the distribution of responses across schools in each ICSEA group. Teachers in lower-ICSEA schools reported lower levels of confidence than those in the higher quartiles. Although these differences were not as stark as for respondents’ confidence in schools’ overall ability to support students’ online learning, the association between greater confidence and higher-ICSEA quartiles was statistically significant, even after controlling for the influence of school type,⁸ and did not vary among types.⁹

⁶ $\chi^2_{MH}(1, N = 1626) = 31.5, p < .001$

⁷ $\chi^2_{Deviance}(18) = 24.0, p = .154$

⁸ $\chi^2_{MH}(1, N = 1699) = 16.0, p < .001$

⁹ $\chi^2_{Deviance}(18) = 20.9, p = .285$

Table 4. Confidence in teaching using primary instructional technology by ICSEA quartile

	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Not at all confident	8.8%	5.0%	2.2%	2.7%
Somewhat confident	31.9%	30.0%	28.3%	23.1%
Confident	37.2%	38.5%	43.3%	44.4%
Very confident	22.2%	26.5%	26.1%	29.7%

Note. Quartile 1 ($n = 433$), Quartile 2 ($n = 423$), Quartile 3 ($n = 406$), Quartile 4 ($n = 437$)

Educators in our sample from schools serving the most marginalised populations were the least confident about using technology for instruction. It is important for policymakers to take note of this disparity, especially given the likelihood of schooling periodically shifting back to distance learning over the next 18 months (Chowdhury et al., 2020). As some Australian communities have seen in recent weeks (Chapman, 2020; Elsworth, 2020; Zagon, 2020), even if the overall COVID-19 transmission rate remains low, individual schools will intermittently close as needed for deep cleaning and quarantine when students or staff test positive.

Ability to communicate and engage students and families

Effective communication with students and families is a key component of effective distance education (Lopes & Vieira, 2018; Simonson et al., 2019; Sun & Chen, 2016; Vlachopoulos & Makri, 2019). For this reason, Pivot asked educators to rate their ability to communicate effectively online with students and families. Response options included “Not very effectively,” “Somewhat effectively,” “Effectively” and “Very effectively.”

Survey respondents teaching in less advantaged communities rated the efficacy of their online communication with students and families significantly lower than respondents teaching in more advantaged schools. This association remained significant after controlling for the influence of school type on both teacher-student communication¹⁰ and teacher-family communication.¹¹ In each case, the pattern of responses by quartile did not vary in a statistically significant way with school type.¹²

Teachers in low-ICSEA schools rated the efficacy of their online communication with students lower than their peers in high-ICSEA schools.

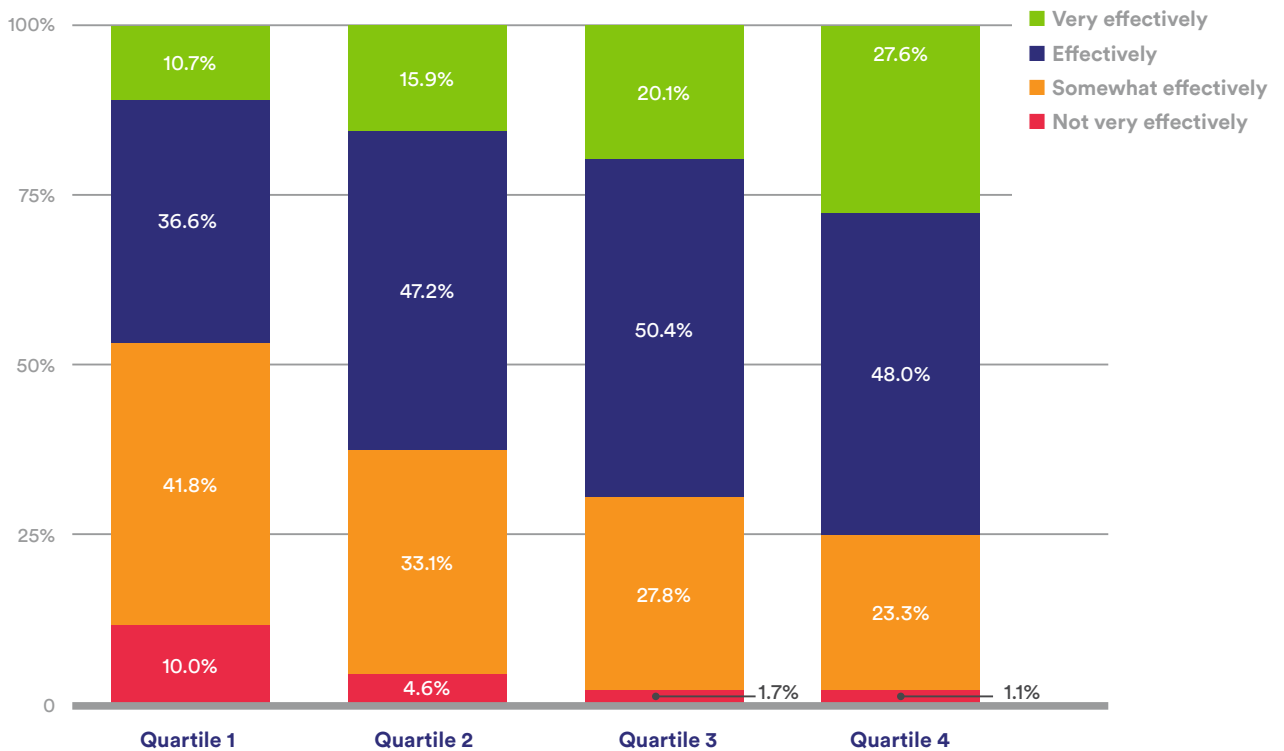
The magnitude of differences across ICSEA quartiles in teachers’ rating of the efficacy of their online communication with students was notable. As shown in Figure 6 below, 47% of Quartile 1 teachers ($n = 225$) reported that they were able to communicate with their students “Effectively” or “Very effectively” online. In contrast, 76% of Quartile 4 teachers ($n = 370$) rated the efficacy of their online communication with students at these levels. The proportion of teachers in Quartile 4 schools rating their communication as very effective was more than twice as large as that of teachers in Quartile 1. In their open-ended responses, educators expressed concerns about maintaining communication with their students during remote learning. As a teacher at a Quartile 1 secondary school in Victoria shared, “The fundamentals still apply, you must form a relationship with your students and put their

¹⁰ $\chi^2_{MH}(1, N = 1916) = 50.0, p < .001$

¹¹ $\chi^2_{MH}(1, N = 1916) = 47.4, p < .001$

¹² Teacher-student communication, $\chi^2_{Deviance}(18) = 22.5, p = .212$; Teacher-family communication, $\chi^2_{Deviance}(18) = 16.7, p = .543$

Figure 6. Efficacy of teacher communication with students by ICSEA level



Note. Quartile 1 ($n = 476$), Quartile 2 ($n = 472$), Quartile 3 ($n = 478$), Quartile 4 ($n = 490$)

well-being at the centre of your teaching.”

These results raise serious concerns. Effective online communication by distance educators likely facilitates student achievement (Croxtan, 2014; Koç, 2017; Rovai & Barnum, 2003). Additionally, robust communication may help decrease feelings of social isolation, which was the most prevalent concern amongst educators in our sample (Flack et al., 2020).

Teachers in low-ICSEA schools also rated the efficacy of their online communication with parents/guardians lower than teachers at schools with higher-ICSEA scores.

There was a similar disparity in teachers’ reports of the efficacy of their communication with students’ families. As shown in Table 5 below, 41% of Quartile 1 teachers ($n = 197$) reported communicating online with families “Effectively” or “Very effectively” compared to 70% of Quartile 4 teachers ($n = 343$). In the qualitative comments, some educators expressed concern about difficulties communicating with parents and guardians. For example, a secondary school teacher at a Quartile 1 government school in Queensland wished for a mechanism that would provide “constructive parental feedback as to how the task was received, any difficulties they experienced in overseeing the task from start to completion and suggested improvements.”

Table 5. Efficacy of teacher communication with families by ICSEA level

	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Not very effectively	14.9%	4.7%	4.0%	4.9%
Somewhat effectively	43.7%	37.5%	32.0%	25.1%
Effectively	33.2%	47.0%	48.1%	50.0%
Very effectively	8.2%	10.8%	15.9%	20.0%

Note. Quartile 1 (n = 476), Quartile 2 (n = 472), Quartile 3 (n = 478), Quartile 4 (n = 490)

There are many plausible explanations for these findings, one of which is Quartile 1 teachers' lower confidence in teaching using technology (see Table 4). The technology skills of students and families may be another salient factor in communication difficulties. Even students who use digital technologies extensively outside of school may lack sufficient skills to successfully use technology in the formal school setting (Wang et al., 2014). Analysis of the qualitative data suggested that this was an obstacle. For example, a language arts teacher at a Quartile 1 secondary school in Queensland said, "The problem with online learning is student digital literacy." Similarly, a primary teacher at a Quartile 1 Catholic school in Western Australia noted that professional learning on their school's online instructional platform was not sufficient without consideration of "students' ability to use the same technology adequately." In addition, as a secondary physical education teacher at a Quartile 1 government school in South Australia declared, "Parents need to know how the platform works, too."

Teachers in the least advantaged schools were less confident that their primary instructional technology supported student engagement than were teachers working in more advantaged schools.

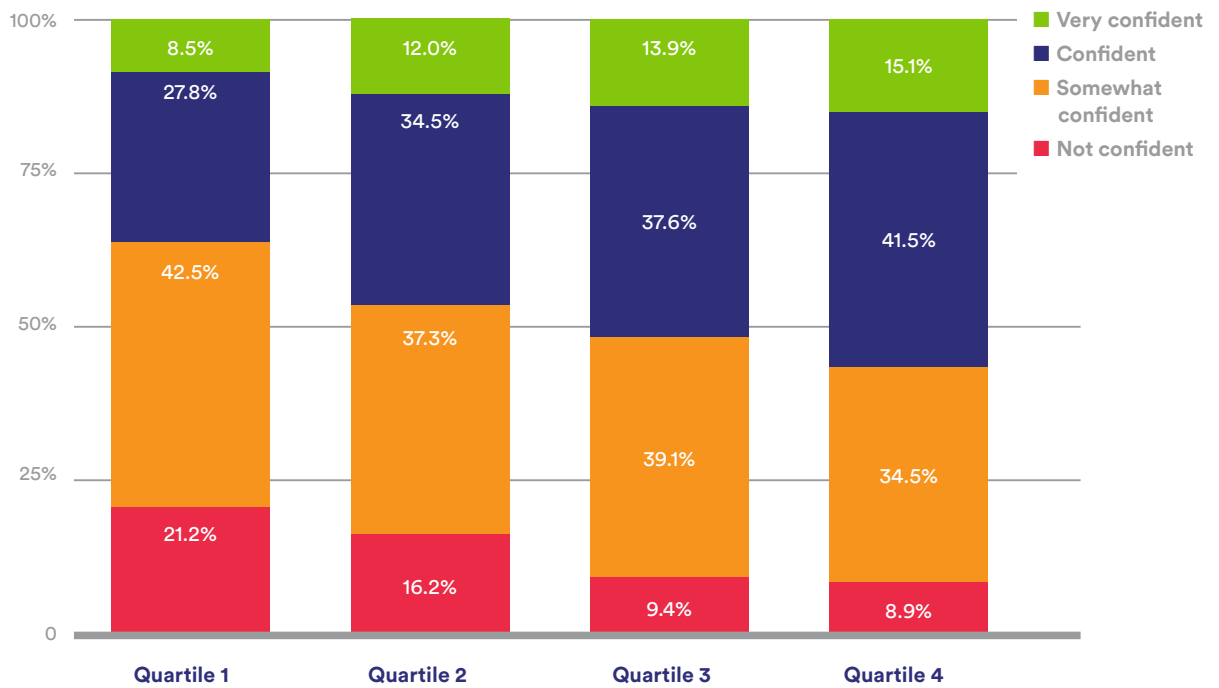
Previous research has shown that learner-teacher interaction in online courses enhances learner motivation (Borup et al., 2013; Martin & Bolliger, 2018) and contributes to higher student engagement (Dixson, 2010; Gayton & McEwen, 2007). Student engagement is essential for student achievement in online learning (Martin & Bolliger, 2018).

The features of teaching technologies have implications for student engagement in distance learning. Pivot examined respondents' ratings of their primary instructional technology and found a significant association between school ICSEA level and respondents' confidence that their primary instructional technology supported the engagement of students in daily learning, even when controlling for the potential influence of school type.¹³ Further, this association did not vary among school types.¹⁴ Figure 7 below displays the distribution of responses.

¹³ $\chi^2_{MH} (1, N = 1898) = 24.4, p < .001$

¹⁴ $\chi^2_{Deviance} (24) = 20.4, p = .676$

Figure 7. Confidence that primary technology supports student engagement in learning by ICSEA quartile



Note. Quartile 1 (n = 471), Quartile 2 (n = 475), Quartile 3 (n = 468), Quartile 4 (n = 484)

Concerns about student engagement in lower-ICSEA schools also permeated the qualitative data.

Although the data did not tell us whether teachers were also using secondary technologies they would have rated higher for supporting engagement, the responses to this question, combined with concerns among educators at lower-ICSEA schools about communicating with their students, suggested that engagement in online learning may have been a challenge at the less advantaged schools in our sample. Themes in the qualitative comments supported this hypothesis as well. Many teachers wondered how they could engage their students without face-to-face interaction and hands-on learning activities. For example, an English teacher at Quartile 2 secondary school in urban Queensland reflected, “Distance teaching is a useful tool to support and differentiate in-class teaching, but it cannot compensate for the loss of subtleties of social human interaction in the classroom.”

The data also indicated that teachers wanted to better understand what their students found interesting or motivating in the online classroom. For example, when we asked teachers about which types of feedback would be most critical for their distance teaching practice, the most frequently selected response was, “Student engagement/motivation data”, with 79.8% (n = 1,174) of respondents indicating an interest in such data.¹⁵ This interest was consistent across teachers from schools of all ICSEA levels. A strong shared desire for student feedback on their engagement and motivation was also apparent in the qualitative data. Many teachers reflected on the difficulty of assessing how students were responding to instruction at home when they could not gauge their reactions by reading facial expressions or body language. For example, a secondary science teacher in Victoria worried, “We won’t feel the motivation of students.”

¹⁵ Other options included: “Formative assessments on learning”; “Summative assessments on learning”; “Student well-being data”; “Student feedback on your online teaching approach”; “Peer observations” and “Formal observations by your school leader(s).”

In their comments, the educators in our sample shared ideas about how technology could support them in this regard (e.g., using video conferencing tools for live synchronous instruction) and expressed their desire for more professional development on this topic. For example, one primary school teacher from the Australian Capital Territory (ACT) wanted “professional development on how to deliver [online] lessons that are engaging for students and not stressful for parents/caregivers.”

Regular attendance and academic engagement for students navigating poverty, students living in remote areas, and Aboriginal and Torres Strait Islander students were already a concern prior to the pandemic (Clinton, 2020). Therefore, it is critical to help educators serving these populations to better engage their pupils, both online and in person. Culturally responsive teaching is an important strategy for improving student engagement and achievement (Chenowith, 2014; Gay, 2002; Ladson-Billings, 1995), especially for Aboriginal and Torres Strait Islander students (Markham et al., 2020; Morrison, Rigney, Hattam, & Diplock, 2019). These practices are also essential in online instruction, but may be substantially more difficult (Heitner & Jennings, 2016; Woodley et al., 2017).

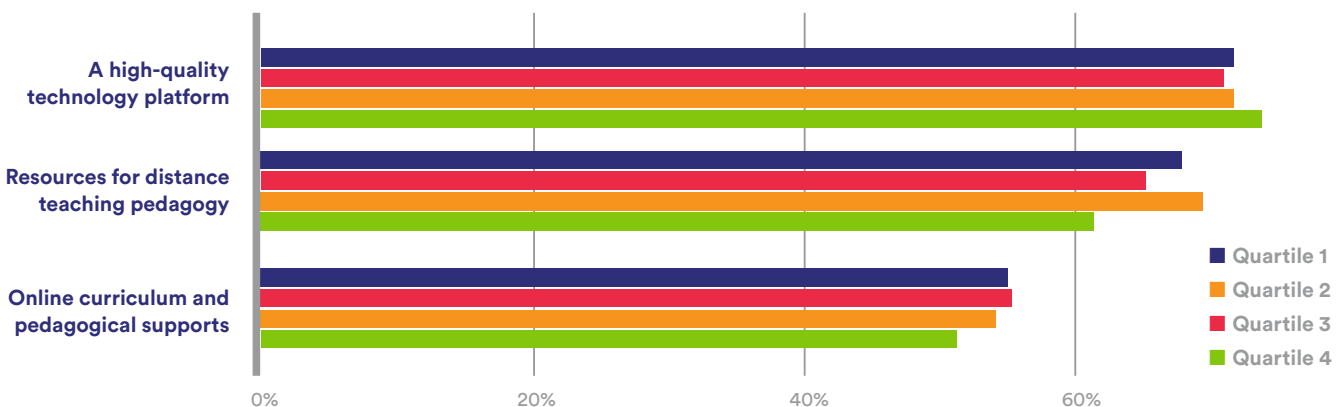
Support is critical for educators to teach online effectively

Listening to practitioner voices is an essential part of engaging all stakeholders in efforts to improve practice and student outcomes. Practitioners are often knowledgeable about local needs and well-positioned to inform policy development (Ellison et al., 2018). In addition, they are experts on their own professional resource and learning needs (McCarthy & Wayne, 2017; Smith, 2017). For this reason, Pivot’s survey directly asked respondents about these needs. This section outlines what the educators in our sample reported would help them to best meet the needs of their students while distance teaching.

There was broad consensus across all ICSEA groups that high-quality instructional technology and resources for distance teaching were critical for supporting effective online teaching.

Pivot asked respondents to indicate which professional supports they felt were critical for high-quality online instruction. The supports on this list fell into two broad categories: professional learning and instructional resources. The three instructional resources we asked about were: “A high-quality technology platform”; “Resources for distance teaching pedagogy”; and “Online curriculum and pedagogical supports.” Instructional resources for distance teaching were rated highly amongst respondents regardless of ICSEA level. As shown in Figure 8 below, there was no apparent pattern related to the ICSEA level of respondents’ schools. The proportion of respondents indicating one of the three resource types was critical ranged from 51% to 74%.

Figure 8. Instructional resources critical for high-quality online instruction by ICSEA quartile

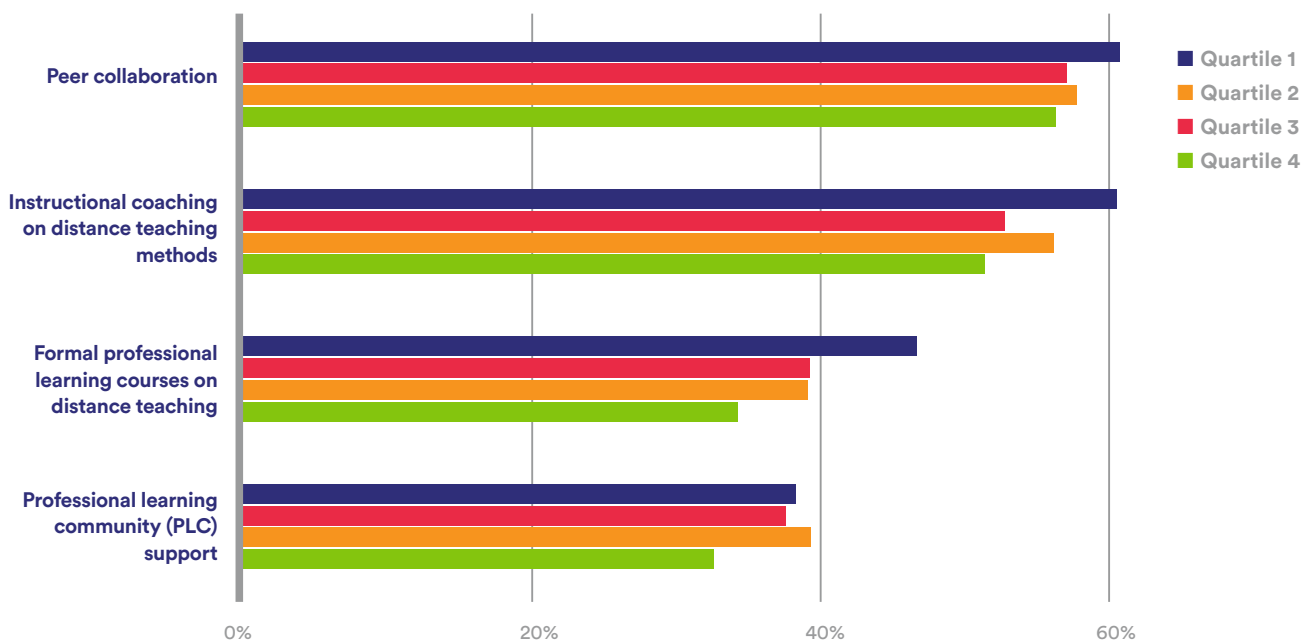


Note. Quartile 1 (n = 460), Quartile 2 (n = 463), Quartile 3 (n = 459), Quartile 4 (n = 474)

Teachers in the least advantaged schools were most likely to say that various types of professional learning were critical for high-quality online instruction.

Our question about supports for high-quality online instruction also included several types of professional learning (PL): “Peer collaboration”; “Instructional coaching on distance teaching methods”; “Professional learning courses on distance teaching”; and “Professional learning community (PLC) support.” Respondents could select as many options as they wished. As shown in Figure 9 below, peer collaboration and instructional coaching on distance learning methods were the most frequently selected categories. Smaller proportions of teachers working in the most advantaged schools (i.e., Quartiles 3 and 4) thought each type of professional learning was critical. In contrast, Quartile 1 teachers were most likely to say three of the four types of support were critical, suggesting that there was a greater appetite for professional learning among teachers working with less advantaged populations.

Figure 9. Professional learning support critical for high-quality online instruction by ICSEA quartile



Note. Quartile 1 (n = 460), Quartile 2 (n = 463), Quartile 3 (n = 459), Quartile 4 (n = 474)

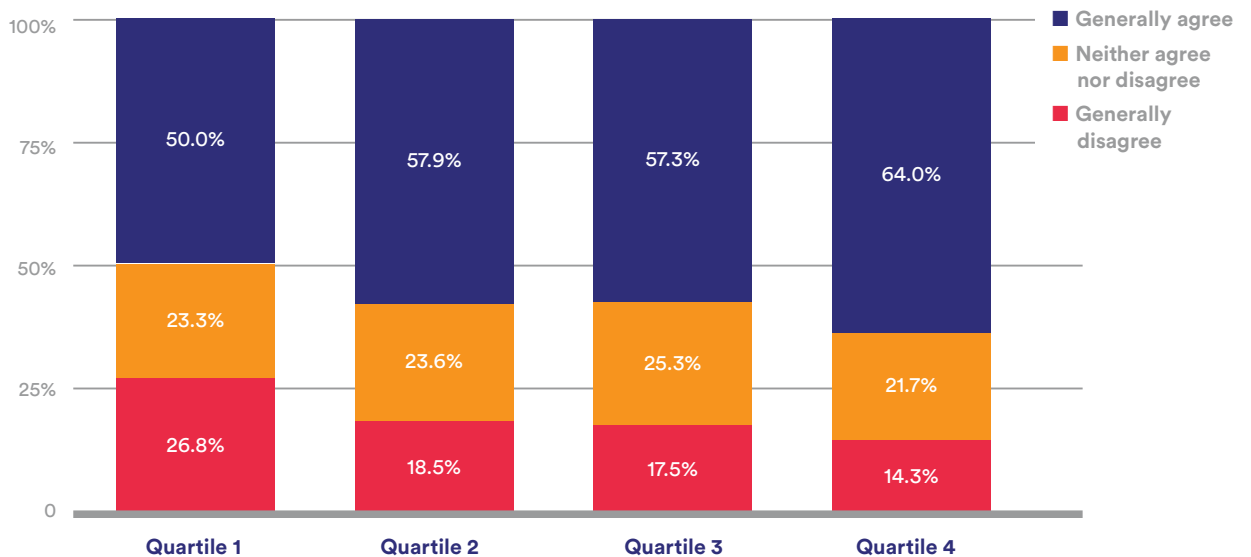
The percentage of respondents indicating that professional learning specific to distance teaching was critical for high-quality online instruction ranged from 35% to 61%. Both the minimum and maximum of this range were lower than that for the instructional resources, suggesting that respondents thought these instructional resources had greater utility for online teaching than various formats of professional learning. For every ICSEA group, the most frequently selected type of support (of both PL and instructional resource items) was a high-quality technology platform.

Nonetheless, the support for professional learning opportunities tailored to distance teaching may suggest that educators are beginning to recognise that many of the competencies for effective online teaching are distinct to the virtual format (Moore-Adams et al. 2016) and require targeted professional learning. As a secondary maths and science teacher at a low-ICSEA school in Victoria mentioned, practitioners need “guidance and professional development regarding best pedagogical practice. We must acknowledge that [online teaching] is different and adapt accordingly.”

Teachers in low-ICSEA schools were significantly less likely to agree that they had received adequate professional development to support their shift to online learning than their peers in high-ICSEA schools.

Teachers’ assessment of the extent to which their professional learning experiences had prepared them for online teaching provided further evidence that those in the least advantaged school communities may need more PL support than their peers in more affluent settings. Pivot asked teachers to respond to the following statement using a five-point agreement scale: “I have received adequate professional development to support my shift to online learning.” As shown in Figure 10 below, a greater proportion of teachers generally agreed that their professional development was adequate as ICSEA level rose. Further, teachers in the most advantaged schools (14.3% | $n = 60$) were almost twice as likely to disagree as those in the least advantaged schools (26.8% | $n = 112$).

Figure 10. Professional development adequate to support shift online by ICSEA quartile



Notes. Quartile 1 ($n = 418$), Quartile 2 ($n = 399$), Quartile 3 ($n = 389$), Quartile 4 ($n = 420$); Five-point Likert scale collapsed into three categories for the purposes of visual clarity (e.g., “Strongly disagree” and “Disagree” collapsed into “Generally disagree”).

The association between school affluence and teachers’ perceptions of the adequacy of their professional development for online teaching, controlling for school type, was statistically significant.¹⁶ This pattern did not significantly vary among school types.¹⁷ Teachers at less affluent schools of any type were less likely to agree that their PL was adequate for the shift to online learning than were teachers at more affluent schools.

Qualitative comments about professional learning provided more evidence that teachers in less advantaged schools were aware of a need for more PL. For example, a primary teacher at a low-ICSEA school in Victoria mentioned a need for “upskilling staff to understand the learning platform to better deliver lessons.” Another teacher at a low-ICSEA secondary school in Victoria described feeling adrift during the transition to distance teaching: “I would have liked more information and preparation whilst we were at school, as it often feels overwhelming trying to figure stuff on your own and hoping you are doing things ‘right.’”

¹⁶ $\chi^2_{MH}(1, N = 1898) = 7.7, p = .006$

¹⁷ $\chi^2_{Deviance}(24) = 27.2, p = .296$

Summary of findings

School closures during the COVID-19 pandemic have reminded many Australians of the essential role schools play in society. The crisis has also laid bare structural inequities in Australia's educational system that have persisted for decades (Baker, 2020). Prior to the pandemic, documented associations between socioeconomic status and student outcomes (Chesters, 2019; Gonski et al., 2011; Kenway, 2013; Ladwig & Luke, 2014; Noble et al., 2020; Thomson et al., 2011) were already a strong concern for stakeholders committed to realising educational equity in Australia. Now, Australians face the likelihood of rolling school closures and periods of distance teaching for up to 18 additional months (Chowdhury et al., 2020).

From our initial research, we found that teachers were overwhelmingly working longer hours to try new techniques and gather feedback to support their students' learning at home (Flack et al., 2020). Even so, many of the educators in our sample worried that distance teaching could worsen existing disparities among students from differing socioeconomic backgrounds. For example, one secondary English and Science teacher from a Quartile 1 school in Queensland concluded: "Distance learning reinforces existing social inequality."

Our results shared in this paper showed that school ICSEA scores were a key factor in how educators have been experiencing the shift to distance teaching. While there were some cross-cutting concerns shared by educators at all schools, we found many significant associations among educators' attitudes related to distance teaching and their schools' ICSEA level. For many of the items on the survey, educators' perceptions of the shift to distance teaching, reports of their experience and stated needs varied considerably with the ICSEA level of their school. To summarise, working in a school with a lower-ICSEA score was associated with:

- Lower levels of agreement that schools were well-positioned to transition to online instruction, and lower confidence in their schools' ability to support students' learning online.
- Less confidence in using technology for teaching, and less confidence that they had received adequate professional learning to teach online.
- Less confidence in being able to effectively communicate with students and families, and lower ratings of primary technologies on sufficiency of support for student engagement.
- Concerns for students' access to Internet, technology and basic needs, and their need for extra instructional support when returning to the classroom.

All of these relationships were statistically significant even after controlling for the influence of school type (i.e., government, religious or independent) using Generalised Cochran-Mantel-Haenszel Stratified Tests of Association. With the exception of agreement about positioning to transition to online instruction, there was no evidence that the patterns of association with ICSEA quartiles varied across school types. These results suggest that educators working in less advantaged communities, even those working in religious or independent schools, may have distinct concerns and support needs related to the student populations they serve.

Broad structural problems require a coalition approach. We stress the importance of partnering with community stakeholders in the recovery process. Policymakers and educational leaders should engage teachers, families, students and community leaders in fostering collective solutions, rather than legislating or mandating unilaterally (Markham et al., 2020). It is especially important during this time to strengthen relationships and to recognise and build upon the assets of local communities (Clinton, 2020). Policymakers should also leverage the expertise of education leaders, including advocacy organisations and technology companies that may have insights into solutions to the current challenges.

Policy recommendations

Given the socioeconomic disparities identified in our analysis, we believe it is imperative that policymakers turn their attention not only to strengthening schools' readiness for an uncertain future and teachers' preparedness to teach online, but also to addressing the basic needs of families in Australia's historically under-served and marginalised communities. Further, preliminary evidence from journalists (e.g., Duffy & Kent, 2020), extensive reviews of existing literature (e.g., Clinton, 2020; Drane et al., 2020; Education Endowment Fund, 2020) and other empirical research (e.g., Brown et al., 2020), also suggest that any negative impacts of distance teaching will disproportionately fall upon Australia's most marginalised students and communities. Given that distance teaching may exacerbate existing inequalities, policy interventions designed to enhance equity are more critical than ever. Based on our findings from the survey data and review of extant literature, Pivot recommends that policymakers keep equity foremost in their minds and take action in the following areas: future planning, digital inclusion and professional learning.

Prepare for future school closures.

As of June 2020, schools across Australia have reopened, but in some cases, isolated outbreaks of COVID-19 have forced individual schools to close again shortly after reopening (Chapman, 2020; Elsworth, 2020; Zagon, 2020). As policymakers continue to grapple with how to best support teachers and students as the format of Australian schooling remains in flux, our results signal a need to concentrate on enhancing the preparedness of schools with lower-ICSEA scores for returning to online instruction. It's also an opportunity for low-ICSEA schools to integrate instructional technology into the school day to improve digital inclusion and ease potential transitions back to distance learning. Addressing these needs in the near-term will help ease transitions in the future. Policymakers can support school communities by allocating funds for supporting transition planning and preparation.

In collaboration with community stakeholders, professional associations and public health experts, it is imperative that education leaders develop detailed response plans for a range of possibilities, including prolonged blended learning (a hybrid model that combines online learning with face-to-face instruction (Graham, 2013)) and rolling school closures. These plans should include trauma-informed strategies for addressing student well-being (Clinton, 2020; Crosby et al., 2018; Phifer & Hull, 2016; Stokes & Brunzell, 2019). Response plans should clearly outline the logistics for managing future shutdown scenarios. Municipalities and regions should make these plans publicly available and actively share them with the community and with their peers in government.

Design a plan that prioritises reaching all students.

While our analysis showed that many students face challenges in learning from home, we are aware that addressing some of those (e.g., by expanding internet access or reducing economic inequality) will be a long-term, expensive undertaking. Understanding this, we recommend that education leaders design response plans that meet the urgency of the moment with an array of strategies for reaching and meeting the needs of all students now.

For students with limited access to technology or the Internet, schools can offer non-technical options for learning at home. For example, schools can prepare hard-copy packets of work, text-based learning plans and boxes of materials for hands-on activities. Such efforts are labour-intensive (Flack et al., 2020), so policymakers should consider supporting regions with funding for additional personnel to support the creation and distribution of these materials. Centralising this work at the regional or municipal level may create economies of scale that will ease practitioner workloads and enable them to focus on refining their practice or nurturing student well-being. Device-sharing schedules and device-based learning are also options for communities with limited access to the internet. Also, states and territories with large numbers of remote communities (e.g., the Northern Territory) may have expertise in delivering distance education that more populous states can draw upon.

Further, this is an opportunity for policymakers to work in close consultation with public health experts and local community leaders to evaluate the potential impact of future school closures in remote and/or economically vulnerable areas and carefully analyse risks and benefits prior to shuttering campuses entirely. Safely continuing on-site programs for children who need them (e.g., children of essential workers, children with disabilities and children navigating poverty) should be a priority. This is also an opportunity to begin a national dialogue around the explicit consideration of the provision of education as an essential service.

Prioritise equity by supporting students and families in low-income areas.

These response plans should focus on equity and prioritise mechanisms for addressing key equity issues (Campbell, 2020). This includes planning for the basic needs of children and families who are most vulnerable to negative impacts from future school closures. In particular, meals for children who rely on school nutrition programs are of utmost importance. Schools should plan food delivery systems in advance. Options include distributing meals via school bus, partnering with local businesses and setting up drive-through or walk-up meal distribution sites (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2020).

More broadly, policymakers should embrace equity-guided strategies for widening and strengthening the economic safety net for families affected by unemployment and providing support for job seekers, especially for Aboriginal and Torres Strait Islander peoples, given the disproportionate economic impact of the pandemic on their communities (Markham et al., 2020).

Address potential learning loss.

Response plans should include provisions for periodically assessing pupils for learning loss and mechanisms for providing extra instructional support for the least advantaged students and those who experienced the most significant learning loss relative to their peers, under a variety of schooling formats (i.e., on-campus, blended learning, remote, etc.). Policymakers can assist with these efforts by allocating resources toward tutoring, after-school programs, extra therapists and other interventions designed to mitigate learning loss.

Special attention should be given to the needs of children with disabilities who may be at risk of prolonged interruption of individualised support services (e.g., speech, physical, or occupational therapy) during school closures (Campbell, 2020). Where possible, education leaders should plan for the continuation of services, either in-person or virtually (where possible), if schools close again.

Conduct additional primary research on the impact of COVID-19 on teaching and learning.

Our initial research was conducted in April while most schools across Australia were in their first few weeks of distance learning, which has provided an important snapshot into the experiences of educators at the beginning of their time supporting students at home. Now that schools across Australia are back in the classroom, we have a unique opportunity to conduct further research that delves into the lived experiences of key stakeholders (students, school leaders, teachers, students, families, professional associations, policymakers, education organisations and educational technology companies) to determine what worked and what did not. There is also an opportunity to identify what practices were most successful in distance learning, what practices students and teachers would like to see incorporated into “normal” schooling, and what practices were not successful. It’s also an opportunity to determine how school and community context have impacted teacher and student experiences.

Implement initiatives to improve digital inclusion for lower-ICSEA schools and communities.

As our analysis showed, teachers in low-ICSEA schools were concerned not only with their students' access to technology but also with their ability to learn online. Digital inclusion is a framework that aims to close the digital divide, which is imperative for effective online learning. Digital inclusion has three important dimensions: access, affordability and digital ability (Thomas et al., 2019). Education departments, foundations and private enterprise have stepped in to help close this gap (Duffy, 2020) but, as our analysis shows, there is more work to be done.

Improve technology and Internet access for economically vulnerable communities.

Broader efforts to make Internet access more affordable are also important, particularly for families who may not qualify for grants. Since 2014, the affordability of Internet access in Australia has improved only marginally, and families are spending a growing share of their income on services (Thomas et al., 2019). Further, even families enjoying relative economic security may not have enough devices if they have multiple children enrolled in school (Campbell, 2020). Conducting family surveys can help government officials and school leaders assess the progress that has been made on access and affordability, and make plans to completely close remaining gaps. Rapid pulse check-type surveys may be a particularly useful tool for tracking progress in this area. Policymakers can also support these efforts, as well as technology acquisition, with funding allocations for schools in less advantaged communities.

Identify and provide high-quality instructional technologies and resources.

Educators from schools of all types believed a high-quality technology platform was essential to successfully teaching online. Nonetheless, there were notable variations in how educators rated their primary technologies performance with respect to core instructional tasks (Flack et al., 2020). Educators also reported that their workloads increased due to the shift to distance teaching (Flack et al., 2020; Baker, 2020). Part of this workload included the tasks of selecting technologies and finding instructional content.

More research is needed to understand how schools select technologies, how they use them and how to maximise their alignment with teacher and student needs. By sponsoring this research and providing schools with guides for tool selection based on the findings, state and territory governments may be able to ease some of this burden. Policymakers may also be able to help teachers with access to high-quality instructional resources. For example, government funds could provide subscriptions to vetted platforms with integrated instructional content aligned to the local curricula. Alternatively, government officials could engage a team of experts to develop an online clearing house of vetted digital content aligned to the national curriculum.

Provide technology upskilling for students.

We recommend that state and territory governments support technology training for students in economically vulnerable communities designed to enhance their comfort and proficiency with technology. Educators in low-ICSEA institutions can support students' development of technology skills while schools remain open for face-to-face instruction. This will help prepare students for a potential return to distance learning, while also furthering digital inclusion goals for the long-term. This training will contribute to increasing students' 21st century skills and future workplace readiness.

Support the development of materials for culturally-responsive online teaching.

Finally, closing the digital divide for Australian students requires equitable access not only to hardware, software and connectivity, but also to culturally-relevant content and teachers trained in culturally-responsive digital pedagogy (Gorski, 2009; Resta & Laferrière, 2008). Access to resources in a variety of home languages and materials for culturally responsive online teaching are particular areas where commercial products may fall short (Vail, 2018). A government task force including representatives from a diverse range of cultural groups could work to address this challenge in a comprehensive way.

Expand professional learning in distance and online teaching.

The COVID-19 crisis has revealed a need for expanded teacher professional learning in several areas: trauma-informed practices, proficiency with technology, engaging students remotely and digital pedagogy. The disparities evident in our data indicate that the learning of teachers working in low-ICSEA schools should be prioritised.

Provide training on trauma-informed educational practices.

As seen in our analysis, social isolation and student well-being were major concerns across the sample. With Australia already seeing rolling school closures due to new COVID-19 outbreaks, it is important that teachers be able to support student well-being. Research shows that teachers and educators can play a pivotal role in students' recovery from traumatic events (Peek & Richardson, 2010). Policymakers should help facilitate professional learning for educators that will aid them in providing trauma-informed support for students who may show signs of psychological distress, including but not limited to anger, anxiety, depression and inattention. In addition to helping students cope with stress related to the pandemic, this approach can enhance equity in general by enabling teachers to help disadvantaged students thrive in the school environment (Crosby et al., 2018).

Upskill teachers in the use of instructional technology.

The success of online distance teaching depends not only on the richness of instructional technologies deployed but also on how instructors leverage the features of those technologies for pedagogical purposes (Volery & Lord, 2000). As a prerequisite, this requires that teachers have basic familiarity with the particular technologies they use for instruction. We recommend that sector leaders partner with organisations with expertise in instructional technologies to develop and offer relevant learning programs to ensure that all teachers in Australia achieve proficiency with navigating and operating instructional technologies. Policymakers can facilitate access with grant funding for program fees, additional funding for classroom coverage while teachers attend training and the expansion of time designated for professional learning.

Expand professional learning in digital pedagogy.

Teachers facilitating blended learning or returning to fully online distance teaching will also need ongoing professional learning in digital pedagogy in order to scaffold their development of teaching competencies unique to digital environments (Pulham & Graham, 2018). Successful implementation of digital pedagogy requires a specialised type of knowledge known as technological pedagogical content knowledge (TPCK), which teachers draw upon as they match technologies, pedagogies, and content to the needs of their students whilst planning instruction (Mishra & Koehler, 2006). Thus, now, more than ever, policymakers and education leaders should work to ensure that professional learning for online teaching should move beyond basic proficiency with instructional technologies to engaging educators in building digital pedagogical skills (Quality Matters & The Virtual Learning Leadership Alliance, 2019). Schools and companies that were engaged in online distance teaching prior to the pandemic may be a good source of practitioner expertise in this area.

Expand professional learning to improve teachers' ability to communicate and engage online.

The particularities of communication in a virtual learning environment require that instructors consider how the online format and features of the teaching platform affect interaction and classroom discourse (Nicol et al., 2003). Although more research is needed, policymakers and school leaders should consider providing teachers with professional learning opportunities to support their development of proficiency in cultivating communication and maximising student engagement in the online classroom.

Integrate instructional technology and digital pedagogy training in pre-service teacher education.

Regulatory agencies and universities should evaluate curricula for pre-service teacher education and consider integrating more opportunities for learning to teach with instructional technology. A 2018 study by the Australian Institute of Family Studies looking at the use of technology in secondary English classrooms found that fewer than 75% of teachers were trained in incorporating technology into their students' learning (Vassallo & Warren, 2018). Further, it is likely that very few Australian teachers have received formal training for online teaching. Looking beyond the pandemic, this additional training would be a valuable asset for digital inclusion efforts in the long-term (Tondeur et al., 2016).

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