

# 2

## How learning continued when schools were closed

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This chapter explores how education systems, schools and students handled the school closures imposed as a response to the COVID-19 pandemic, and the relationships between those responses and school systems' resilience to disruption. The chapter examines how the duration of school closures is related to student performance and well-being, and to equity in the school system. It also explores whether education systems prepared their students for autonomous and remote learning, and how the support provided, and students' experiences, during remote learning may have differed in more resilient school systems. The chapter concludes with a look at specific policies that education systems designed and implemented to support students in their learning and well-being during school closures.

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For Australia\*, Canada\*, Denmark\*, Hong Kong (China)\*, Ireland\*, Jamaica\*, Latvia\*, the Netherlands\*, New Zealand\*, Panama\*, the United Kingdom\* and the United States\*, caution is advised when interpreting estimates because one or more PISA sampling standards were not met (see Reader's Guide, Annexes A2 and A4).

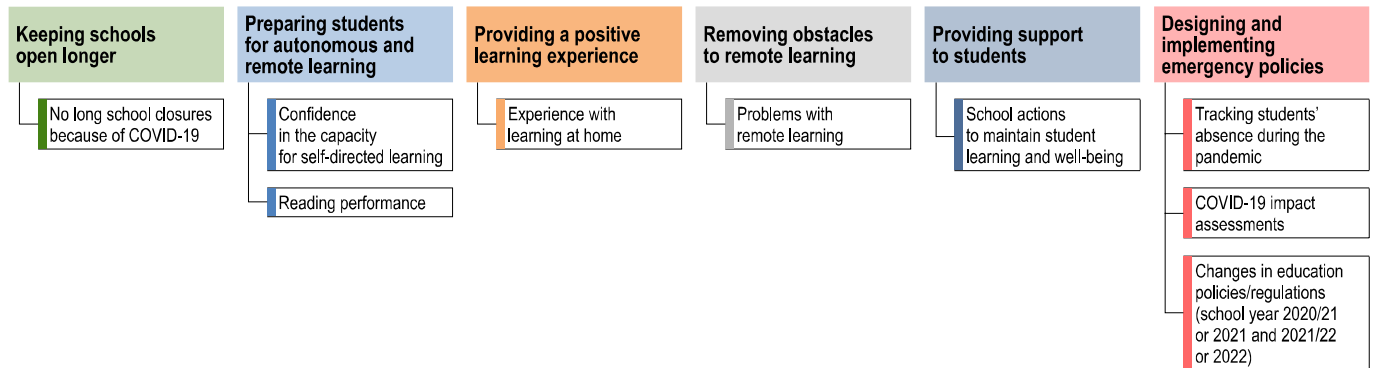
The COVID-19 pandemic revealed, in stark relief, just how important it is for education systems to be resilient to disruption. No country was spared the sudden social upheaval that followed in the wake of the virus; every country was obliged to rethink how to support its students, especially those most vulnerable, in such adverse circumstances. This chapter focuses on the most common response to the pandemic – school closures<sup>1</sup> - and what enabled some education systems to be more successful than others in their efforts to keep learning alive and students engaged in school, particularly when schools were closed (see Chapter 1).

## What the data tell us

- Two out of three countries/economies closed their schools for longer than three months for a majority of their students during the COVID-19 pandemic. Students in systems that spared more students from longer closures scored higher in mathematics and reported a greater sense of belonging at school in 2022 as compared to 2018.
- Students reported feeling less confident about taking responsibility for their own learning than they felt about using digital technology when learning remotely, on average across OECD countries and in most education systems.
- Students' experience with learning at home was more positive in systems that were better prepared for remote learning. However, when learning remotely, 40% of all students reported feeling lonely and 50% of all students reported feeling anxious about schoolwork and that they fell behind in their studies; and three in ten students reported that teachers were not available when needed, on average across OECD countries.
- Almost one in two students indicated that, when learning at home, they frequently had difficulty motivating themselves to do schoolwork, and one in three students frequently did not fully understand school assignments, on average across OECD countries.
- Students in education systems whose schools provided more activities to maintain learning and well-being during school closures reported feeling more confident in their ability to learn autonomously and remotely if their school has to close again in the future.

This chapter examines how education systems responded to the COVID-19 pandemic, focusing on aspects that are associated with resilience (Figure II.2.1). The chapter begins with an examination of the duration of school closures and how that is related to differences in student performance and well-being, and to the system's capacity to ensure that all students, regardless of their socio-economic background, can achieve at high levels (socio-economic fairness). PISA 2022 results show that resilient systems kept more students in school through the pandemic and closed schools for shorter periods of time (less than three months). The chapter also examines whether students are prepared for remote and more autonomous learning, and how this is related to an education system's resilience. PISA 2022 data show that schools in resilient education systems provided students with more support and positive experiences during remote learning, allowing all students, including disadvantaged students, to continue learning, remain engaged, and develop confidence in their ability to learn autonomously. Details on the indices covered here are provided in Annex A1.

Figure II.2.1. How learning continued when schools were closed as covered in PISA 2022



The chapter also reviews some of the emergency policies adopted by education systems to support schools as they continued with their programmes remotely (see Annex B3 for more information) (OECD, 2021<sup>[1]</sup>; OECD, 2021<sup>[2]</sup>; UNESCO Institute for Statistics UNICEF The World Bank OECD, 2022<sup>[3]</sup>).

### Components of resilience: Keeping schools open longer

When schools shut their doors, students often missed out on opportunities to learn. This was particularly true at the beginning of the pandemic when remote teaching was often not provided or not well-functioning. As school closures are all but certain to occur in the future, understanding the consequences for student learning is vital.

#### ***High-performing systems and those where students' sense of belonging at school strengthened over time were also those that kept schools open longer***

Although most countries around the world closed schools for some period of time at least once during the pandemic, PISA 2022 data show that the duration of school closures varied widely across countries (UNESCO Institute for Statistics UNICEF The World Bank OECD, 2022<sup>[3]</sup>). According to students' reports, the duration of COVID-19 school closures also varied substantially within countries/economies (Table II.B1.2.1).

In PISA 2022, students were asked whether their school building was closed to students for more than a week (some schools closed and reopened multiple times during the period) in the previous three years due to COVID-19. In most countries/economies, schools were closed for several months because of the pandemic (Table II.B1.2.1). On average across OECD countries, fewer than one in two students reported that their school was closed for less than three months. In fact, only one in three countries/economies with available data avoided longer school closures for a majority of their students. In Iceland, Japan, Korea, Sweden, Switzerland and Chinese Taipei more than three out of four students indicated that their school was closed for less than three months, while in Brazil, Ireland\*, Jamaica\* and Latvia\* only one out of four students or fewer who responded to the question reported so. As much of the analysis about school closures is based on responses from students, caution is advised when interpreting the data (Box II.2.1).

#### **Box II.2.1. Interpreting the data from students on school closures**

This chapter focuses on responses from students (via the student questionnaire) rather than from school principals since many students were enrolled in different schools during the COVID-19 school closures (Table II.B1.2.3). For those students, the information about the experiences and responses provided by principals may not characterise what happened at their schools during school closures. On average across OECD countries,

only 44% of students were enrolled at their school three or more years and the share is below 10% in a number of countries (Table II.B1.2.3).

As with any information gleaned from questionnaires, students' responses to the questions on school closures are subject to various biases, including social desirability and cultural bias. In addition, students answered the questions on school closures retrospectively, making it more difficult for some students to remember the details of their school's closure if it occurred early in the pandemic. Since the timing and duration of school closures varied across countries, systemic bias should also be considered. In some education systems, half of the student body alternated with the other half in attending classes in person. Hence, the duration of school closures, defined as the closure of the building itself, does not capture all the time that individual students were not permitted to enter the school building. The support provided by schools varies, depending on when and for how long schools were closed. Schools in education systems where closures were relatively rare and brief may have provided fewer supportive actions, since schools may have resumed in-person classes before support was considered necessary. In these cases, the values on the indicators for school support may be low.

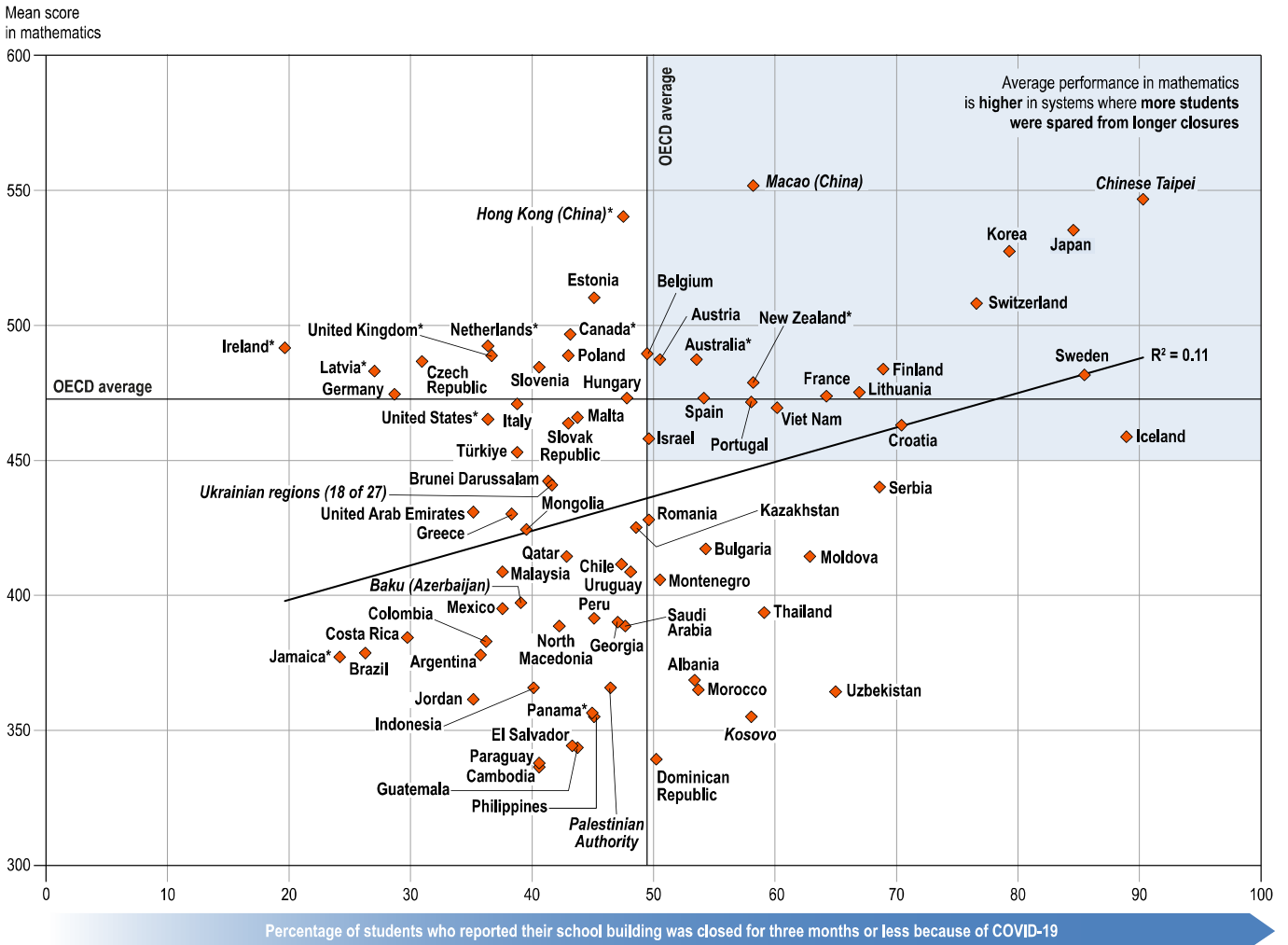
The share of non-responses was particularly high for questions about COVID-19 school closures. This limits the representative nature of the data reported in this chapter and results in less precise estimates since standard errors are higher than for other parts of the questionnaire. This should be kept in mind when drawing conclusions from the results presented in this chapter. A comparison of the characteristics of students who responded to the question on the duration of COVID-19 school closures with those who did not respond showed that non-responding students reported greater life satisfaction, were of lower socio-economic status and scored lower in mathematics, science and particularly in reading (Table II.B1.2.2). Boys, students in lower secondary school, those with an immigrant background and those not enrolled in the modal grade for 15-year-olds were over-represented among the group of non-responding students.

At the system level, students' responses were strongly related to principals' responses (collected via the school questionnaire) to questions about the duration of school closures ( $r = 0.78$  across all systems, Table II.B1.2.1). Even though the responses of students have to be interpreted with caution, the strong relationships suggest that students' and principals' responses provide a similar picture of the average duration that schools were closed in countries/economies. The slight differences between students' and principals' reports probably reflect disparities in school closure policies in the countries/economies. During the pandemic, many countries/economies closed schools partially to try to contain the virus while allowing face-to-face teaching and learning for as many students as possible (OECD, 2021<sup>[2]</sup>). In many countries, schools opened for certain grades, levels or age groups, often giving preference to students at lower levels of education (OECD, 2021<sup>[1]</sup>). School closures were often only imposed in affected regions, schools or classes, not nationwide (e.g. teaching shifted to remote mode for classes where COVID-19 cases were detected or for contact cases within these classes).

Not all of the changes in performance, equity and well-being between 2018 and 2022 are due to the pandemic. Therefore, short-term trends were additionally analysed in relation to longer-term trends (whenever those were available) using data from PISA assessments prior to 2018 to see if they diverge from the overall trends observed in countries/economies (i.e. "adjusted short-term trends"). The percentage of students who reported school closures of three months or less was more strongly and positively related to the adjusted short-term trends for performance as compared to the unadjusted trends (Tables II.B1.2.46 and II.B1.2.48). However, the relationship was not significant. Performance improved significantly more in education systems where students reported fewer problems with remote learning than in systems where more students encountered more problems, after accounting for the pre-2018 trends in the analysis.

Overall, PISA 2022 student-reported data show that systems that spared more students from longer closures (longer than three months) showed higher average performance in mathematics and a greater sense of belonging at school as compared to education systems where more schools were closed for longer periods (Figure II.2.2 and Table II.B1.2.46).

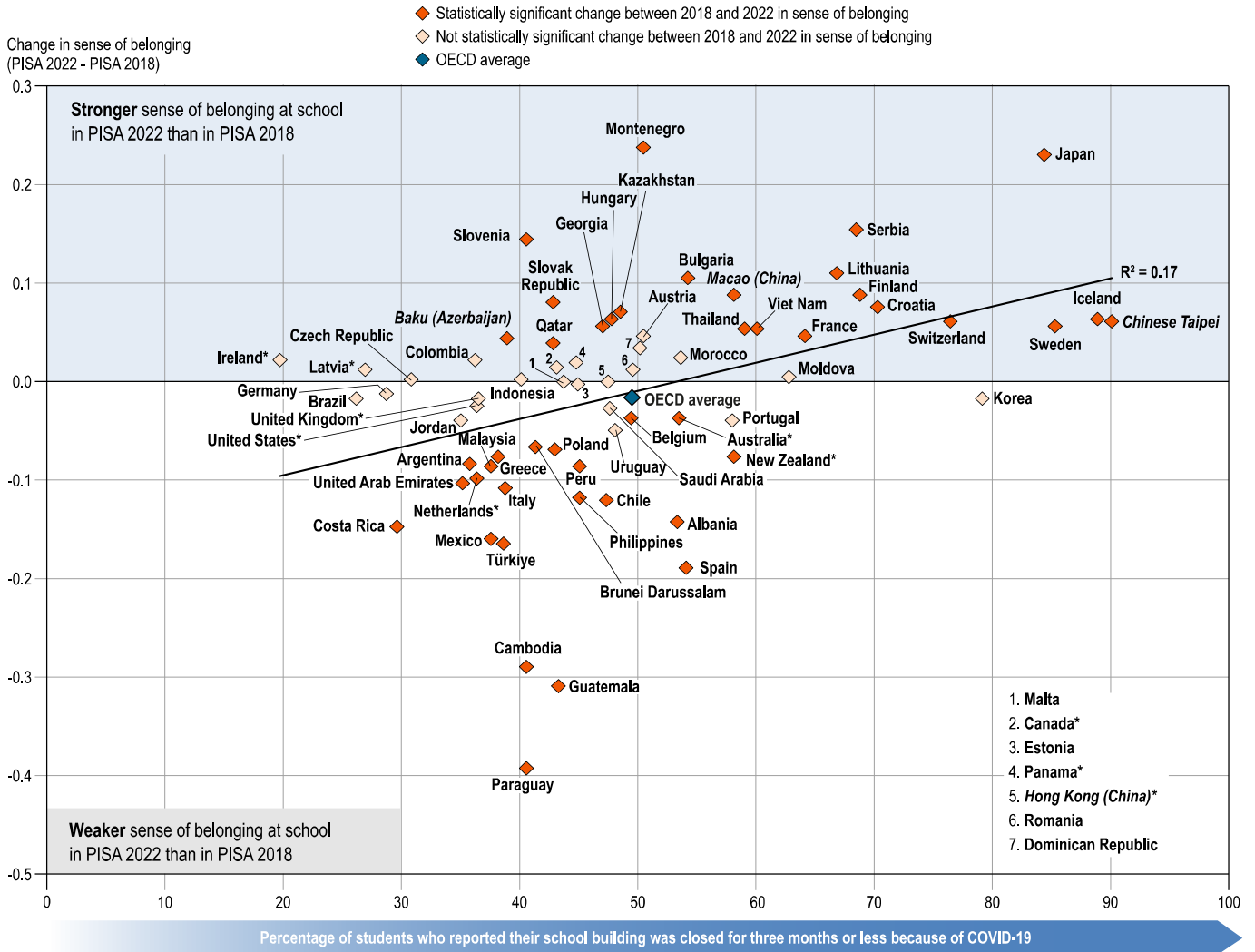
Figure II.2.2. COVID-19 school closures and mathematics performance



Source: OECD, PISA 2022 Database, Annex B1, Chapter 2; and Volume I, Annex B1.

Countries/economies that avoided long school closures for more of their students, according to student reports, had more stable or improving trends in their sense of belonging at school (Figure II.2.3). Japan, which closed its schools for only three months or less to 84% of its students, as reported by students, had one of the greatest improvements in students' sense of belonging at school, reaching a level above the OECD average in 2022. The PISA results concur with findings from several reviews that linked COVID-19 school closure policies to adverse health effects and behaviours among adolescents (Hume, Brown and Mahtani, 2023<sup>[4]</sup>; Lehmann, Lechner and Scheithauer, 2022<sup>[5]</sup>; Rajmil et al., 2021<sup>[6]</sup>; Saule et al., 2022<sup>[7]</sup>; Viner et al., 2022<sup>[8]</sup>). These include psychological issues, such as anxiety, loneliness, depression, dissatisfaction with life and a higher risk of suicidal thoughts or attempts at suicide. Obesity, unhealthy food consumption and decreased physical activity have also been observed. However, the effects of the duration of school closures are less well researched. PISA 2022 data also show that there was a shift in many countries in students' interest in working in the health sector between 2018 and 2022 while interest in other sectors, such as ICT, followed a steady trend (Box II.2.2). PISA 2022 results point to the far-reaching consequences that the COVID-19 pandemic may have had on students' lives.

Figure II.2.3. COVID-19 school closures and change between 2018 and 2022 in sense of belonging



Source: OECD, PISA 2022 Database, Annex B1, Chapters 1 and 2.

**Box II.2.2. How the pandemic changed students' career expectations**

PISA 2022 results suggest that 15-year-olds may be susceptible to the public image of professions when deciding on their career path. The digital sector rose to prominence as a critical determinant of economic growth and international competitiveness a while ago and provides good career prospects. In one out of two PISA-participating countries/economies, the share of 15-year-olds who expect to work in an ICT-related profession (e.g. software and web developers, data miner) when they are about 30 years old grew between 2018 and 2022 (Table II.B1.2.4). In fact, interest in working in the ICT sector decreased only in Baku (Azerbaijan) and the Netherlands\*.

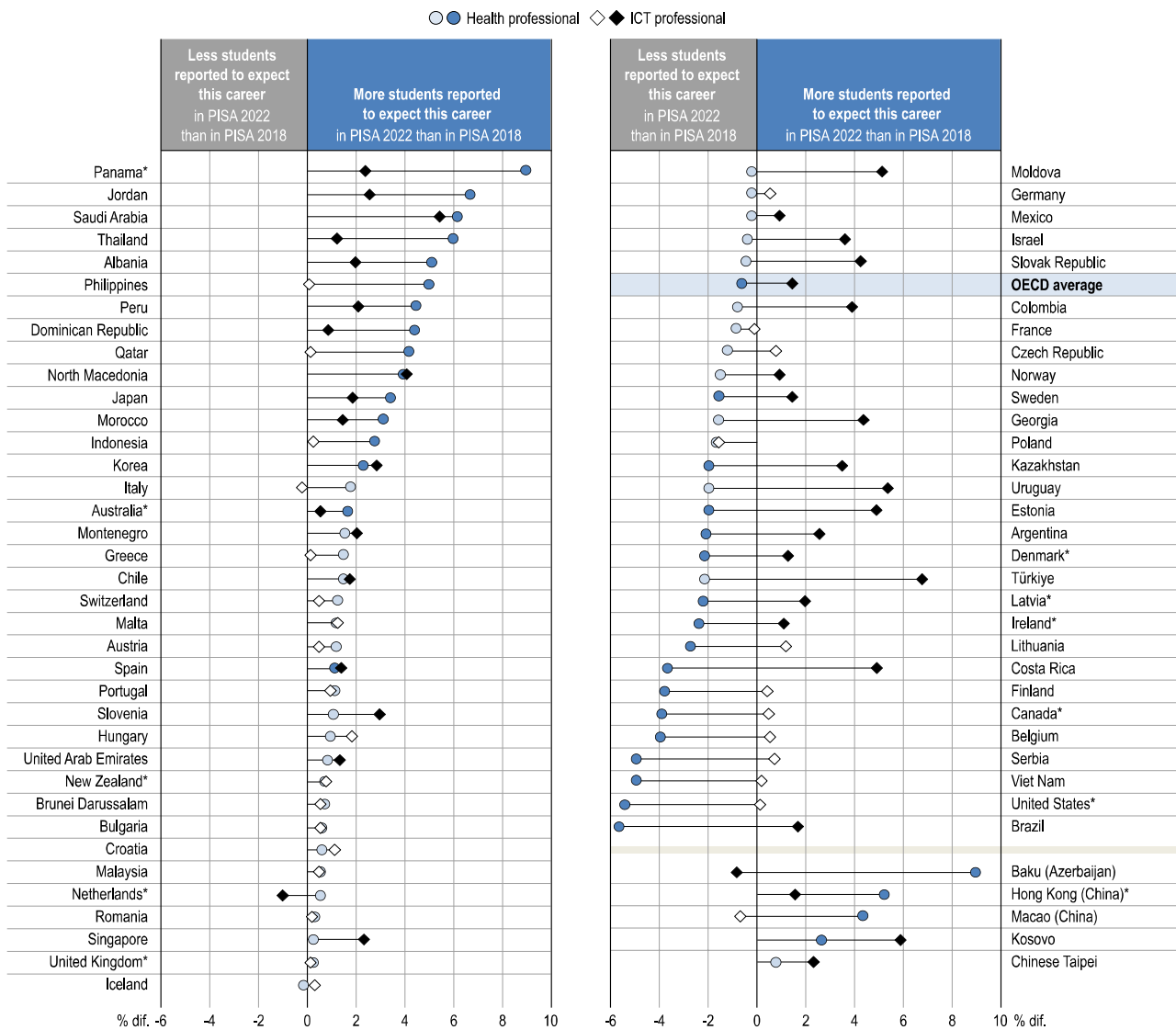
In the wake of COVID-19, the health sector has attracted a lot of attention – and not all of it good. For example, while the work of health professionals during the pandemic was acknowledged to be indispensable, the public also learned of the long working hours and stress involved, and the low pay for nurses and medical support staff. PISA 2022 results concerning students' interest in working in this field were equally mixed (Figure II.2.4). In a quarter of countries/economies, the share of students interested in working as a health professional (e.g. doctors, nurses, veterinarians) grew since 2018, but in another quarter of countries/economies that share decreased. In

the rest of the participating countries/economies, the share of students interested in working in the health sector remained stable over the period.

Students' interest in the health sector decreased more in systems that had higher absolute numbers of COVID-19 cases and deaths between 2020 and 2022 as well as relative numbers of COVID-19 cases (i.e. cases per million inhabitants); but their change in career interest was unrelated to the relative number of COVID-19 deaths (Table II.B1.2.4 and Figure II.1.2). The fact that reporting on COVID-19 cases and deaths in the public realm often focused on absolute, rather than relative, numbers may explain these findings. One of the reasons for the decrease in students' interest in pursuing a health-related career in highly affected countries/economies may be that trust in the health profession and science declined when students felt that the sector was overwhelmed by the COVID-19 pandemic. The pandemic also no doubt highlighted some of the disadvantages of working in this sector.

**Figure II.2.4. Change between 2018 and 2022 in expectation of a career in health and ICT**

Percentage-point change of students who expect to work as the following when they are about 30 years old



Notes: Only countries and economies with available data are shown.

Statistically significant differences between PISA 2018 and PISA 2022 (PISA 2022 – PISA 2018) are shown in a darker tone (see Annex A3).

Countries and economies are ranked in descending order of the change between 2018 and 2022 in the percentage of students who expect to work as a health professional.

Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

## Components of resilience: Preparing students for autonomous and remote learning

In situations where schools have to be closed, systems and schools have to ensure that education can continue effectively in remote mode to avoid severe learning losses. Remote education forces students to learn more independently – and to draw on self-directed learning skills (Lab, 2021<sup>[9]</sup>; Schleicher, 2020<sup>[10]</sup>). These skills enable learners to assume primary responsibility for their learning, set objectives, create a learning plan, and develop techniques to get and stay motivated to learn (Boyer et al., 2013<sup>[11]</sup>; Cazan and Schiopca, 2014<sup>[12]</sup>). Systems that support their students in developing these skills help their students be successful not only in school but also, later on, in the labour market (Cazan and Schiopca, 2014<sup>[12]</sup>; Morris, 2019<sup>[13]</sup>). Today's workers are expected to maintain and upgrade their knowledge and skills throughout their lives – and assume most, if not all, of the responsibility for doing so.

Self-directed learning skills can be improved through personalised and collaborative online or offline learning that helps students plan, organise and monitor their learning activities (Khodaei et al., 2022<sup>[14]</sup>; Kim et al., 2014<sup>[15]</sup>; Lee et al., 2014<sup>[16]</sup>). Promoting the acquisition of these skills in school is also an investment in the resilience of education systems. School closures are not just history; they are likely to be endured in the future too. Students' ability to learn autonomously thus ensures that learning continues even in adverse circumstances. In Viet Nam, for example, students with greater confidence in their own capacity for self-directed instruction spent more time learning during the COVID-19 school closures than their peers with less confidence did (Tran et al., 2020<sup>[17]</sup>).

### ***Students were more confident about using digital technology for remote learning than about taking responsibility for their own learning***

PISA 2022 explored whether education systems prepared students for self-directed learning by asking students to report on their confidence in their capacity for self-directed learning in case their school building has to close again in the future. Overall, students felt more confident about using digital technology for learning remotely during future school closures than they felt about taking responsibility for their own learning (Figure II.2.5 and Table II.B1.2.5). For instance, on average across OECD countries, about three out of four students reported that they feel confident or very confident about using a learning-management system, a school learning platform or a video communication program, as well as about finding learning resources on line on their own. Seven out of ten students felt confident or very confident about completing schoolwork independently or planning when to do schoolwork on their own and assessing their progress with learning. Only six out of ten students felt so about motivating themselves to do schoolwork and focusing on it without reminders.

There were large differences between countries/economies in terms of students' confidence in their capacity for self-directed learning. For instance, in Cambodia, Colombia, El Salvador, Guatemala, Kazakhstan and Panama\*, over 75% of students felt confident that they can motivate themselves to do school work, but in Brunei Darussalam, Ireland\*, Israel, Japan, Poland and the United Kingdom\* less than 50% of students felt this way (Figure II.2.5 and Table II.B1.2.5). In Jordan, Morocco, the Palestinian Authority, the Philippines, Thailand only around 50% of students felt confident or very confident about using a video communication program, while in Croatia, Estonia, Italy, Lithuania, Portugal and Sweden 84% of all students or more felt confident about doing so. Moreover, in Japan and Malaysia less than 50% of students felt confident about completing schoolwork independently, while in Colombia, Croatia, Italy, Panama\* and Portugal more than 80% of students felt confident in this regard.

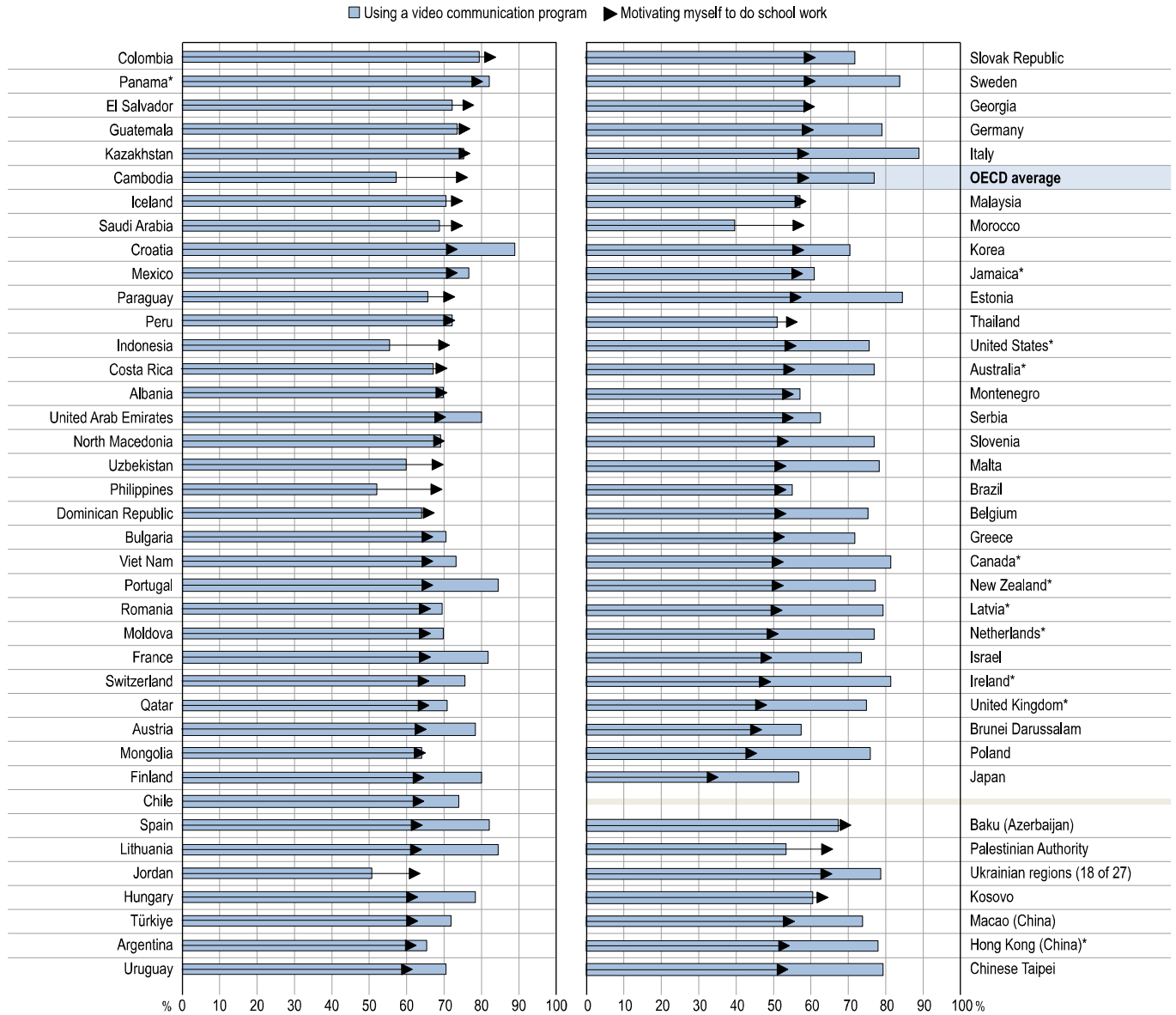
On average across OECD countries, socio-economically advantaged students and those in upper secondary education (ISCED-3) were more confident than disadvantaged students and those in lower secondary school (ISCED-2) that they could learn well autonomously and remotely if schools have to close in the future. These differences, in favour of advantaged students, were observed in almost all education systems with available data and remained even after accounting for student performance in mathematics (Table II.B1.2.11). The differences related to socio-economic status in students' confidence in self-directed learning were largest in the Dominican Republic, Germany, Korea, Malaysia and Peru; they were not observed in Baku (Azerbaijan) or Jamaica\* (Table II.B1.2.6). Students with an immigrant background reported similar levels of confidence in their capacity for self-directed learning as non-immigrant students, on average across OECD countries. Interestingly, girls had greater confidence in their



capacity for self-directed learning than boys, on average across OECD countries and in around a third of all participating education systems. The largest gender differences in students' confidence in their capacity for self-directed learning, in favour of girls, were observed in Austria, Germany and Saudi Arabia.

**Figure II.2.5. Students' confidence in self-directed learning**

Percentage of students who reported feeling confident/very confident in taking the following actions if their school building closes again in the future



Note: Only countries and economies with available data are shown in this figure.  
 Items are ranked in descending order of the percentage of students who reported feeling confident or very confident in motivating themselves to do school work.  
 Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

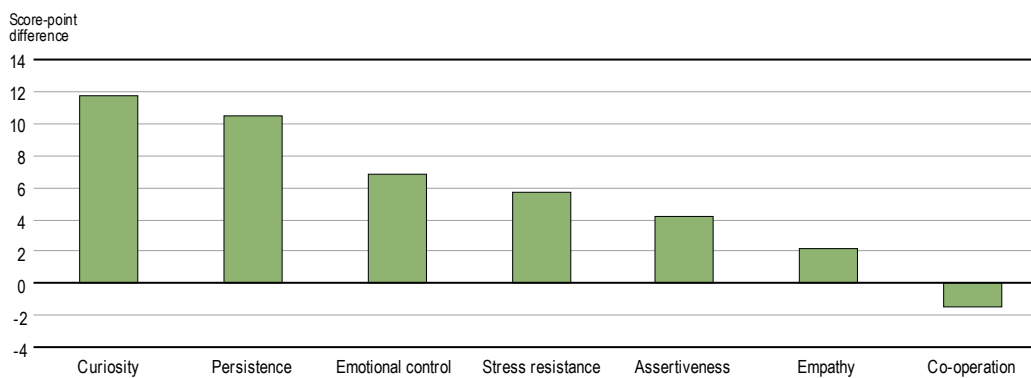
Promoting other skills, such as social and emotional skills, is important for ensuring that students can learn more independently and remotely. PISA 2022 results show that students with better social and emotional skills were more engaged in remote learning and scored higher in mathematics (see Box II.2.3).

### Box II.2.3. The value of social and emotional skills

PISA 2022 shows that social and emotional skills are related to students' mathematics performance in all countries/economies with available data (Table II.B1.2.19). As shown in Figure II.2.6, students that are intellectually curious, persistent and better able to control their emotions outperform their peers. These findings show that cognition and emotion are intertwined ingredients of academic success (OECD, 2021<sup>[18]</sup>; OECD, 2020<sup>[19]</sup>); they also show how important it is to invest in cultivating intellectual curiosity, a strong determination in pursuing goals and tasks, and the ability to regulate emotions in the face of challenges and frustrations.

### Figure II.2.6. Social and emotional skills, and mathematics performance

Change in mathematics performance associated with a one-unit increase in the following indices; OECD average



Notes: All values are statistically significant (see Annex A3).

All linear regression models account for students' and schools' socio-economic profile. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

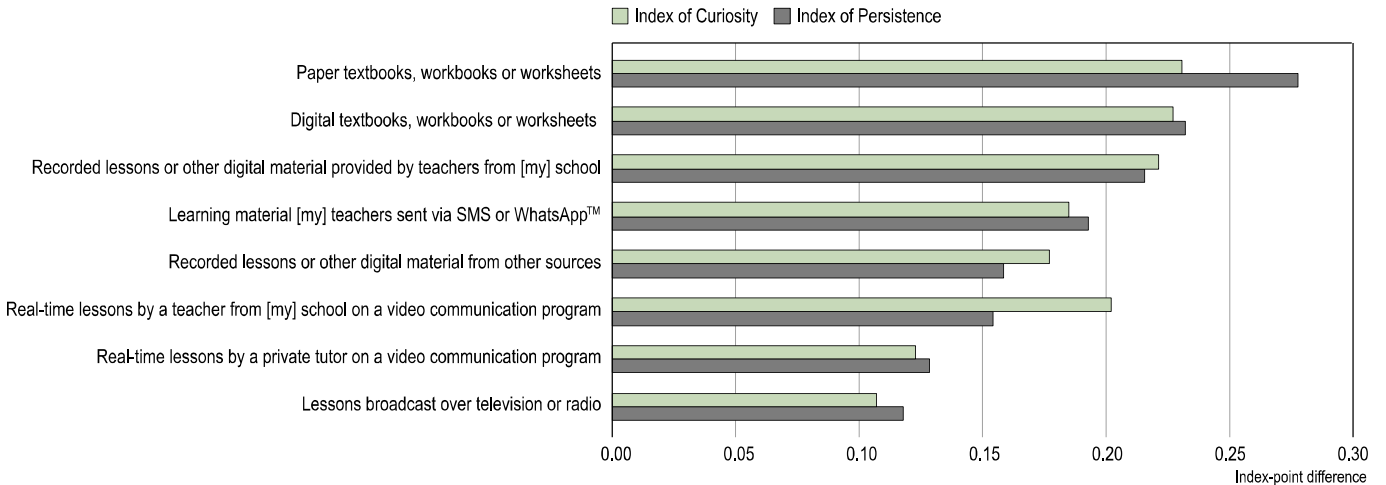
Items are ranked in descending order of the change in mathematics performance.

Source: OECD, PISA 2022 Database, Chapter 2.

PISA 2022 also shows that schools play an essential role in fostering social and emotional skills even when school buildings are closed. For example, providing interesting learning material can fuel curiosity as more curious students are willing to invest more time in learning. Figure II.2.7 shows, for example that students who used textbooks, workbooks or worksheets, whether on paper or digital, every day or almost every day during COVID-19 school closures showed greater persistence and curiosity. The relationship between social and emotional skills, and academic performance might be small, but even small effects can have a major impact on outcomes over time. Behaviours are reinforced and maintained as positive outcomes accrue (Roberts, Caspi and Moffitt, 2003<sup>[20]</sup>). More curious and persistent students are willing to invest more time and effort in learning, beyond obligatory assignments, which helps them perform better academically, personally and professionally long after their school days are over.

### Figure II.2.7. Persistence, curiosity and learning resources during COVID-19 school closures

Change in the index of persistence and curiosity when students reported using the following learning resources during COVID-19 school closures every day or almost every day compared to those who reported using them about once or twice a week or less; OECD average



Notes: All values are statistically significant (see Annex A3).

All linear regression models account for students' and schools' socio-economic profile. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Learning resources are ranked in descending order of the change in the index of persistence.

Source: OECD, PISA 2022 Database, Chapter 2.

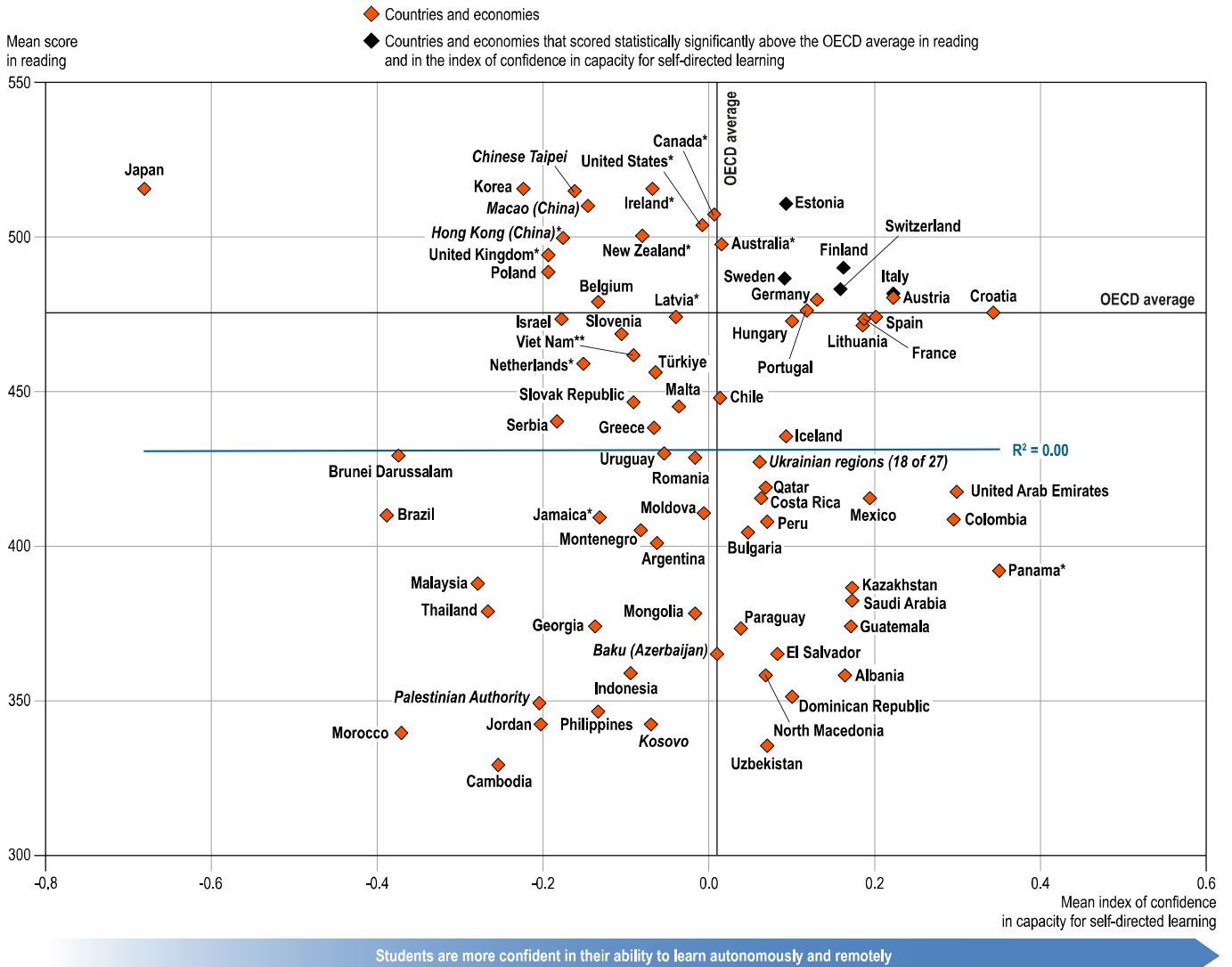
### Few systems prepared their students well for remote learning

Students in most of the education systems that have shown to be resilient in mathematics from pre- to post-COVID did not have above-average confidence in their capacity for self-directed learning. The pre- to post-COVID trends observed in PISA 2022 were unrelated to students' average confidence in these practices.

Students in Colombia, Croatia, Panama\* and the United Arab Emirates, on the other hand, reported feeling particularly confident, on average, about their capacity to learn remotely and autonomously if their school building has to close again in the future (Table II.B1.2.5 and Figure II.2.8). However, in all of these countries the average performance in reading was below the OECD average in 2022 (see Table I.2.2 Volume I (OECD, forthcoming<sub>[21]</sub>)); only in Croatia was reading performance close to the OECD average in 2022. Sufficient reading skills are required if students are to learn on their own, since digital and non-digital learning resources are heavily text-based.

In contrast, in Estonia, Finland, Italy, Sweden and Switzerland students' confidence in their capacity for self-directed learning and average performance in reading were both above the OECD average, indicating a solid foundation for remote and more autonomous learning. In all of these education systems mathematics performance was also close to or above the OECD average in 2022 (Table II.1).

Figure II.2.8. Reading performance and students' confidence in their capacity for self-directed learning



\*\* Caution is required when comparing estimates based on PISA 2022 with other countries/economies as a strong linkage to the international PISA reading scale could not be established (see Reader's Guide and Annex A4).  
 Note: Countries and economies that scored statistically significantly above the OECD average in reading and in the index of confidence in capacity for self-directed learning are marked in a darker tone (see Annex A3).  
 Source: OECD, PISA 2022 Database, Annex B1, Chapter 2; and Volume I, Annex B1.

To ensure effective learning in remote mode, schools also need to be prepared for remote instruction. PISA 2022 found that schools' preparedness for remote instruction differed across countries/economies and that schools that took actions to adjust remote instruction before or in response to COVID-19 are better prepared for remote instruction in the future (see Box II.2.4).

### Box II.2.4. Easing the shift to remote learning

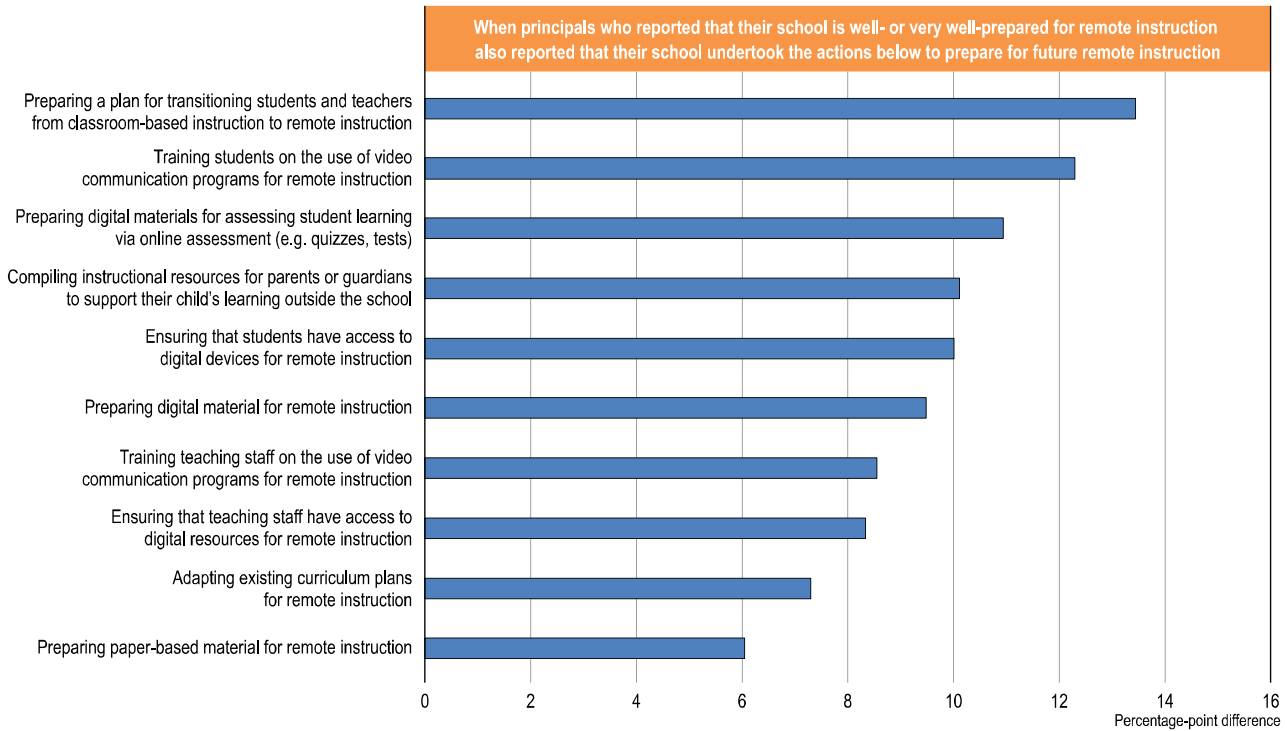
Schools' preparedness for future remote learning varied significantly across countries/economies in 2022. Principals in the Dominican Republic, North Macedonia, the Philippines, Saudi Arabia and Thailand reported that their schools were very well-prepared for remote learning after the pandemic, while principals in France, Greece, Iceland and Morocco reported that their schools were not well-prepared (Table II.1.2.22). In some countries/economies, including Saudi Arabia and Thailand, principals reported that their schools were already well-prepared for remote instruction before COVID-19. This suggests that these school systems both managed school closures due to the pandemic better than others and appear prepared for remote learning in the future.

However, overall results suggest some schools struggled to shift to remote learning during school closures while others grew from this experience. Principals in several countries, including Iceland and Morocco, reported that their schools were less prepared for remote instruction after the pandemic, whereas principals in Albania, Brazil, Cambodia and Romania reported that their schools were more prepared after the pandemic. Figure II.2.9 shows that a possible explanation for these perceptions is that some schools took actions to adjust to remote instruction while others did not, leading their principals to feel more or less prepared for remote instruction in the future (Table II.1.2.23).

The largest difference in preparedness was observed for schools that prepared a plan for transitioning students and teachers from classroom-based instruction to remote instruction before or in response to COVID-19 compared to those that did not. More students were in schools whose principal reported feeling well- or very well-prepared for future remote instruction when the principal also reported that the school prepared a transitioning plan (a difference of 13 percentage points compared with the percentage of students in schools that had not prepared a transitioning plan). Other actions that are related to a school's preparedness for remote learning are the use of video communication programs for remote instruction and preparing digital material for remote education (e.g. reorganising existing resources and/or designing new resources). PISA 2022 data suggest that preparing paper-based material for remote instruction or adjusting existing curriculum plans is less relevant, on average across OECD countries. However, in the Netherlands\* and the United Kingdom\* more students were in schools whose principal reported feeling well- or very well-prepared for future remote instruction and who also reported that the school prepared paper-based material for remote instruction (a difference of 48 and 41 percentage points, respectively). In Japan and Morocco more students were in schools whose principal reported feeling well- or very well-prepared for future remote instruction and who also reported that the school adapted existing curriculum plans (a difference of 37 and 40 percentage points, respectively). The bottom line is that using available resources and undertaking concrete actions to use those resources to prepare for remote education helped principals feel better prepared for remote instruction if their school building has to close to students for an extended period in the future.

**Figure II.2.9. Perceived preparedness for remote instruction, by actions taken**

OECD average



Note: All values are statistically significant (see Annex A3).

Items are ranked in descending order of the percentage-point difference between the share of students in schools whose principal reported that their school is well-prepared or very well-prepared to provide remote instruction, compared to the share of students in schools whose principal reported that their school is not very prepared or not prepared at all to provide remote instruction.

Source: OECD, PISA 2022 Database, Chapter 2.

## Components of resilience: Providing positive learning experiences

Students' experiences with remote learning vary widely, with important implications for their engagement with online learning, their performance and their psychological well-being (Deng et al., 2021<sup>[22]</sup>; Ineval Ecuador, 2022<sup>[23]</sup>; McKellar and Wang, 2023<sup>[24]</sup>; Walters et al., 2021<sup>[25]</sup>). Education systems and schools need to ensure that those students affected by school closures have the support necessary to benefit from remote learning and remain healthy.

### **Three in ten students reported that teachers were not available when needed during school closures**

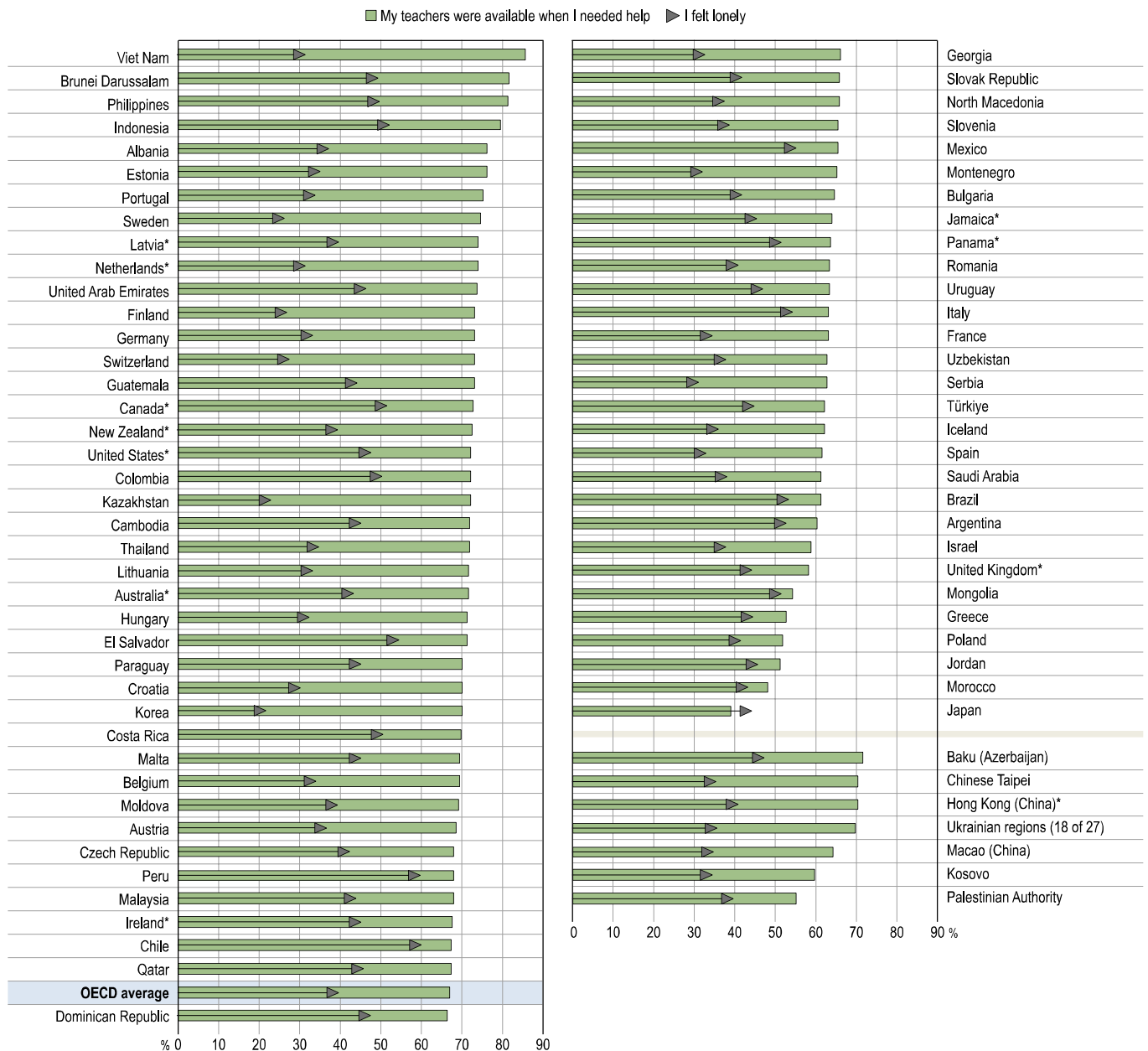
Overall, PISA 2022 results suggest that students' experience with remote learning was not positive (Table II.B1.2.24). On average across OECD countries, less than 70% of 15-year-old students agreed or strongly agreed that their teachers were available when they needed help and that they improved their skills in using digital devices for learning purposes. Only around half of all students enjoyed learning by themselves, felt well-prepared for learning remotely or that their teachers were well-prepared to provide instruction remotely. At the same time, 40% of all students felt

lonely, and 50% of all students felt anxious about school work and reported that they fell behind in their school work and that they missed sports and other physical activities organised by their school. Only around four in ten students were motivated to learn.

Students from different education systems differed in their experiences with remote learning. For example, teachers across education systems were not equally available when students needed help (Figure II.2.10). Over 80% of students in Brunei Darussalam, the Philippines and Viet Nam agreed or strongly agreed that their teachers were available when they needed help, whereas in Japan and Morocco less than 50% of students so reported.

**Figure II.2.10. Teacher support and students' loneliness**

Percentage of students who agreed or strongly agreed with the following statements about the time when their school building was closed because of COVID-19; based on students' reports



Countries and economies are ranked in descending order of the percentage of students who reported that their teachers were available when they needed help.

Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

On average across OECD countries, socio-economically advantaged students and students attending upper secondary school (ISCED-3) agreed or strongly agreed more often than disadvantaged students and those in lower secondary school (ISCED-2) that, when their school building was closed because of COVID-19, their teachers were available when they needed help (Table II.B1.2.25). Similarly, girls indicated more often than boys, on average, that their teachers were available when needed. Large variations were also observed across countries/economies. For instance, around 70% of advantaged students but only 64% of disadvantaged students reported that their teachers were available when needed – a significant difference of 6 percentage points, on average across OECD countries/economies (Table II.B1.2.25). Yet this difference was observed in less than half of all participating countries/economies, and differed in magnitude. For example, in Korea, Malaysia, New Zealand\*, Türkiye and Ukrainian regions (18 of 27) the percentage-point difference was over or close to 15 points, whereas it was less than 8 points in Argentina, Brunei Darussalam, Finland, Ireland\*, Morocco, Qatar, the Palestinian Authority, the United Arab Emirates and the United Kingdom\*. Equally important, in North Macedonia and Paraguay the difference related to socio-economic status was reversed: disadvantaged students agreed more often than their advantaged peers that their teachers were available when needed.

### ***Students' experience with learning at home was more positive in systems that were fair and better prepared for remote learning***

Students in education systems that ensured a more positive experience with remote learning during school closures were more confident that they could learn independently and remotely if their school has to close again in the future (Figure II.2.11). For instance, in Estonia, Finland, Sweden and Switzerland students scored above the OECD average in reading and reported above-average confidence in their capacity for self-directed learning in 2022 (Figure II.2.8). Students in these countries also reported that their experience with remote learning was particularly positive, with 73% or more of all students reporting that their teacher was available when they needed help.

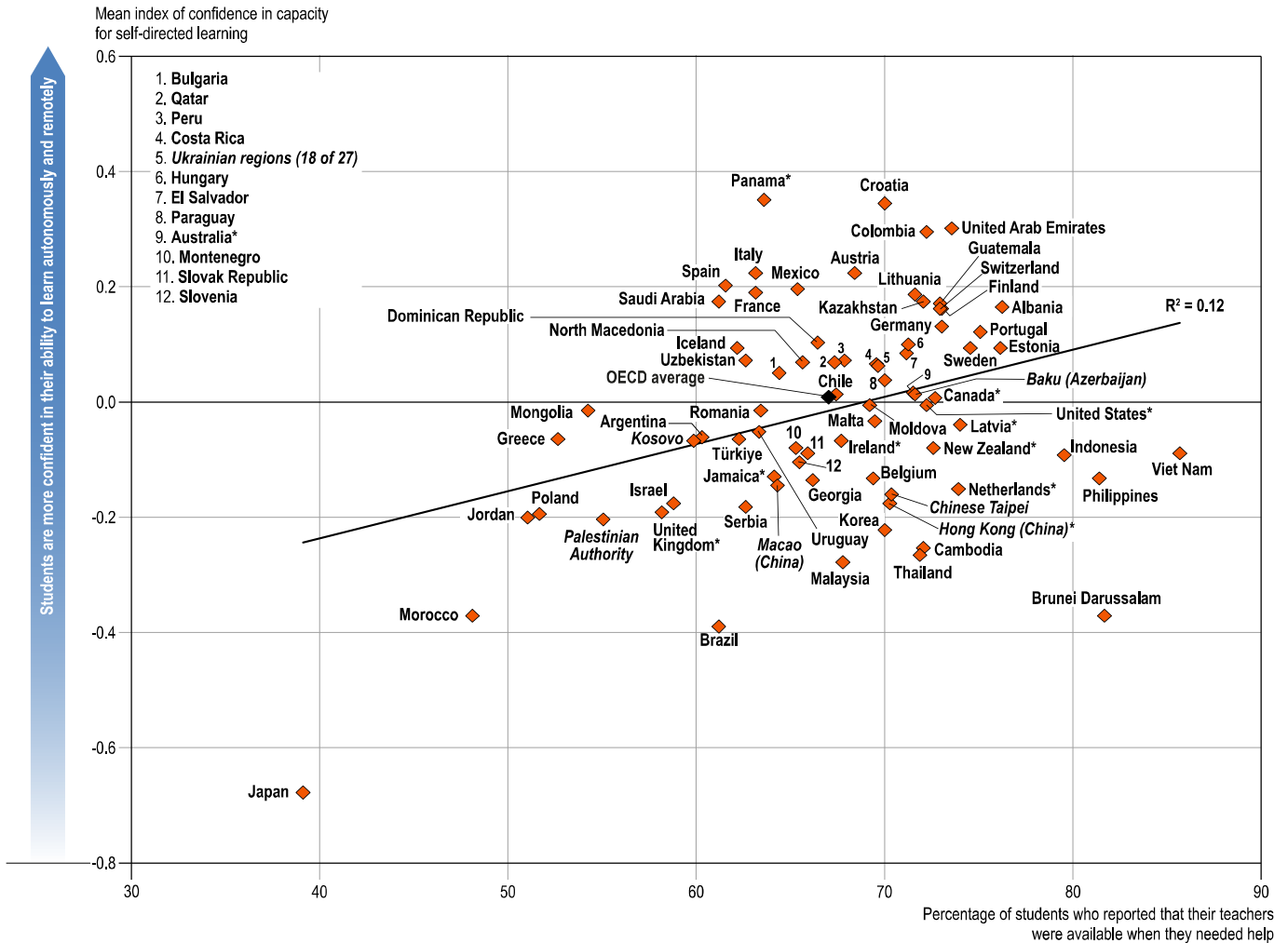
Findings for students' experience with learning at home and education system's resilience were mixed. Students in low-performing systems reported more positive experiences with learning at home (Table II.B1.2.45) – as did students in systems that were more socio-economically fair. More important, students' experience with learning at home was unrelated to performance trends (Table II.B1.2.46).

When interpreting the relationship between the index of students' experience with learning at home and both performance and well-being, it is important to keep in mind that the index comprises a variety of experiences with learning at home, and their relationship with students' performance within countries/economies varies substantially. However, their association with students' confidence in self-directed learning point in a similar direction overall (see below and Tables II.B1.2.26 and II.B1.2.29).



**Figure II.2.11. Teacher support and students' confidence in their capacity for self-directed learning**

Based on students' reports of their experience during COVID-19 school closures



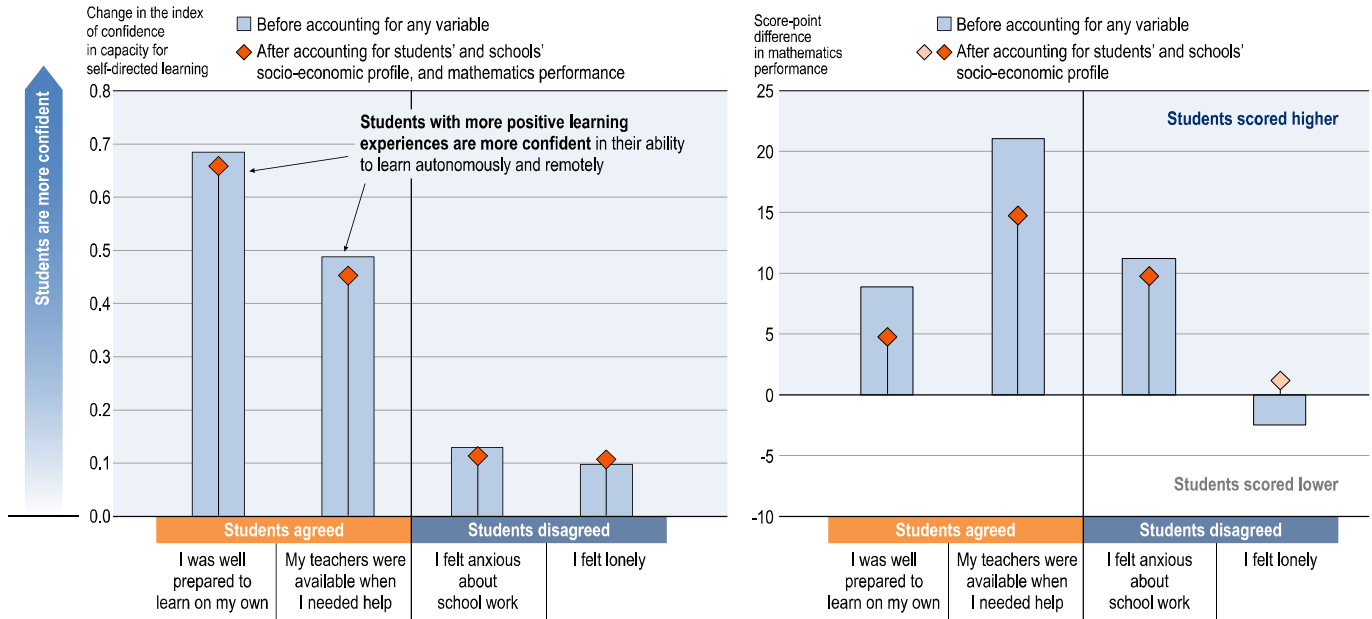
Note: Positive values on the vertical axis mean students are more confident in their capacity for self-directed learning.  
 Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

**Students whose teachers were available for help when schools were closed scored higher in mathematics and were more confident in their capacity for self-directed learning**

As in the system-level findings, students' experiences were related to their confidence in their capacity for self-directed learning, before and after accounting for students' and schools' socio-economic profile, and performance in mathematics (Figure II.2.12, Tables II.B1.2.26, II.B1.2.27 and II.B1.2.28). On average across OECD countries, students with more positive experiences – for example, students who agreed or strongly agreed that they feel well-prepared to learn on their own or that their teachers were available when they needed help – felt more confident about learning independently if their school has to close again in the future. Experiences more closely related to learning remotely (e.g. students' and teachers' preparedness and teachers' availability) were strongly related to students' confidence, whereas more general experiences were weakly or even negatively related (e.g. feeling lonely or anxious about schoolwork, missing sports and physical activities organised by schools).

### Figure II.2.12. Remote learning, mathematics performance and confidence in self-directed learning

Change in the index of confidence in students' capacity for self-directed learning/in mathematics performance, when students agreed or disagreed with the following statements about the time when their school building was closed because of COVID-19; OECD average



Notes: Changes in the index of confidence in students' capacity for self-directed learning are all statistically significant (see Annex A3). Score-point differences in mathematics that are statistically significant are shown in a darker tone (see Annex A3). The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS). Items are ranked in descending order of the change in the index of students' confidence in their capacity for self-directed learning, after accounting for students' and schools' socio-economic profile, and mathematics performance. Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

In line with the system-level results, findings for the relationship between students' experiences on the one hand, and performance in mathematics, on the other, were mixed (Table II.B1.2.26). Teachers' availability when students needed help had the strongest relationship to both average mathematics performance and students' confidence in self-directed learning, on average across OECD systems. Students who agreed or strongly agreed that their teacher was available scored 15 points higher in mathematics and were more confident than their peers that they can learn autonomously and remotely.

### Components of resilience: Removing obstacles to remote learning

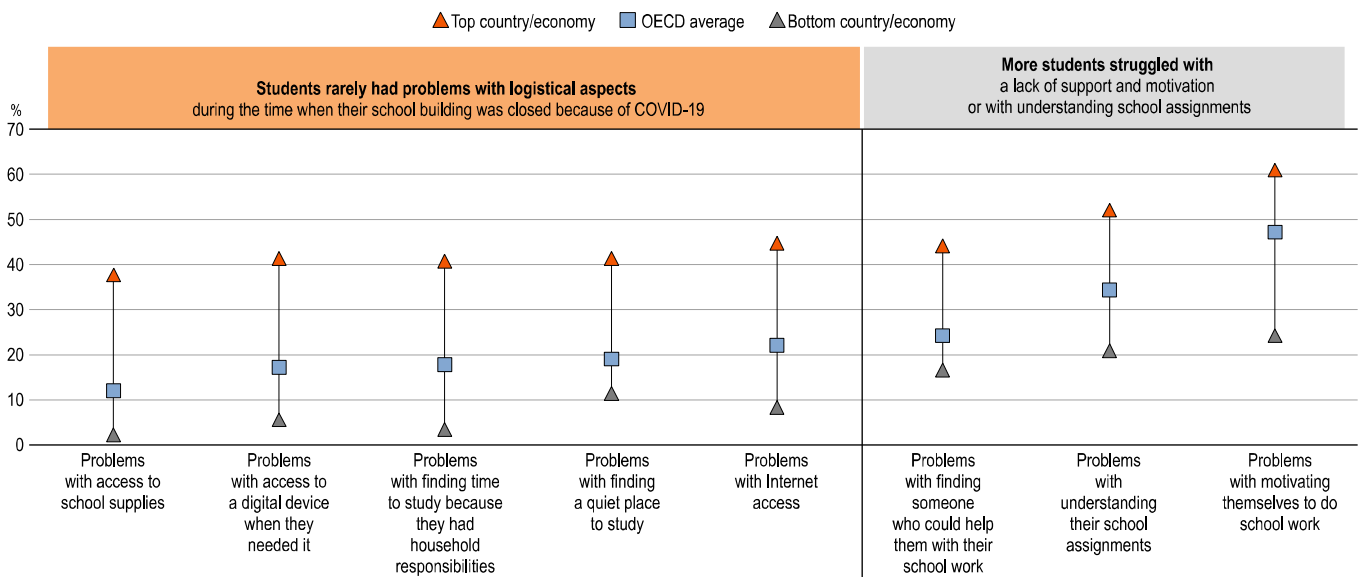
Some students, often those who were already having difficulties in face-to-face learning settings, such as socio-economically disadvantaged or low-achieving students, struggled even more during COVID-19-related school closures. Low-achieving students, for example, found it hard to motivate themselves to learn remotely (Berger et al., 2021<sup>[26]</sup>; Mælan et al., 2021<sup>[27]</sup>). Disadvantaged students tend to have limited access to digital devices and the Internet at home, and their families might not be able to provide the same kinds of support that more advantaged families can offer (Irwin, 2021<sup>[28]</sup>; Shi et al., 2022<sup>[29]</sup>). Removing obstacles to remote learning is essential for ensuring that students can continue to learn and remain connected to schools throughout the distance-learning period.

## Remote learning left many students struggling to understand assignments and motivate themselves

PISA 2022 results show that most students across OECD countries reported that they rarely had problems learning remotely and independently during the time when their school building was closed because of COVID-19; however many students struggled with motivating themselves to do schoolwork or with understanding school assignments (Figure II.2.13 and Table II.B1.2.30). At least three out of four students reported that they never or only a few times had problems with access to a digital device when they needed it, with Internet access, with finding a quiet place to study, with time to study because of household responsibilities or with finding someone who could help them with schoolwork. In contrast, almost one in two students indicated that they had problems at least once a week with motivating themselves to do schoolwork. One in three students had problems at least once a week with understanding school assignments. Students across education systems were not troubled by these problems to the same extent. For instance, in Australia\* and the United Kingdom\* six out of ten students reported having frequent problems to motivate themselves to do schoolwork – more than double the share of students in Guatemala, Iceland, Indonesia, Kazakhstan, Korea, Moldova and Chinese Taipei who so reported.

**Figure II.2.13. Problems with remote learning**

Percentage of students who reported that when their school building was closed because of COVID-19 they had the following problems when completing their school work once a week or every day or almost every day; OECD average



Items are ranked in ascending order of the percentage of students at the OECD average.

Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

There were also large disparities between students of different socio-economic status within countries. Across OECD countries and in over half of all countries/economies, more disadvantaged students than advantaged students reported that they had frequent problems with remote learning; but in over a third of all countries/economies there was no significant difference between these two groups of students (Table II.B1.2.31). Interestingly, in Cambodia and Korea advantaged students were more likely than disadvantaged students to report frequent problems with remote learning.

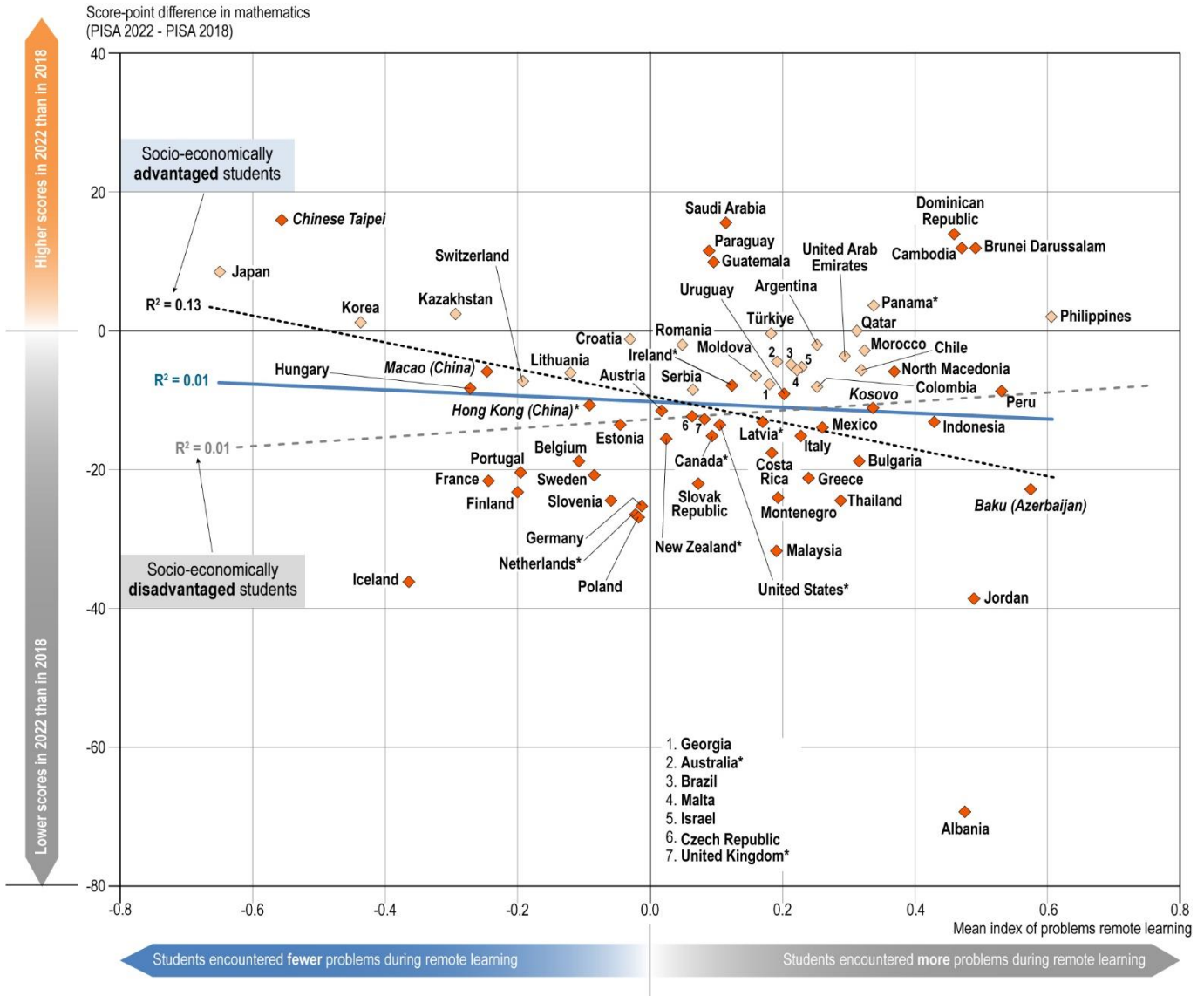
***In resilient education systems, students encountered fewer problems during remote learning***

Education systems in which students encountered fewer problems during remote learning also saw improvements in their students' sense of belonging at school pre- to post-COVID (Table II.B1.2.46). This could be a sign that removing obstacles to remote learning helps keep students engaged with school. These systems also tended to be high performers in 2022 (Table II.B1.2.45).

Systems where students faced fewer problems during remote learning showed more positive trends in mathematics performance from pre- to post-COVID for advantaged students (Figure II.2.14). At the same time, problems with remote learning were unrelated to disadvantaged students' performance. Students in Japan, Korea and Chinese Taipei, where average performance in mathematics between 2018 and 2022 improved or remained stable, including those of advantaged and disadvantaged students, reported fewer problems with remote learning than did students across OECD countries. In these systems over 88% of students – 6 percentage points or higher than the OECD average – reported that they rarely had problems finding time to study because they had household responsibilities. Education systems in which fewer students reported problems with remote learning also had more positive 2018-2022 performance trends (Table II.B1.2.48), when analysed in relation to longer-term trends (i.e. “adjusted short-term trends”), even though no significant relationship was observed to the 2018-2022 performance trends, when longer-term trends were not considered (i.e. “unadjusted short-term trends”, see Box II.2.1 for an explanation).

**Figure II.2.14. Problems with remote learning and mathematics performance, by students' socio-economic status**

Change between 2018 and 2022



Notes: Statistically significant changes in mathematics performance between 2018 and 2022 are shown in a darker tone (see Annex A3). Positive values in the index of problems with remote learning indicate that the student encountered more problems during remote learning. Negative values indicate that the student encountered fewer problems. A socio-economically disadvantaged (advantaged) student is a student in the bottom (top) quarter of the PISA index of economic, social and cultural status (ESCS) in his or her own country/economy. Source: OECD, PISA 2022 Database, Annex B1,

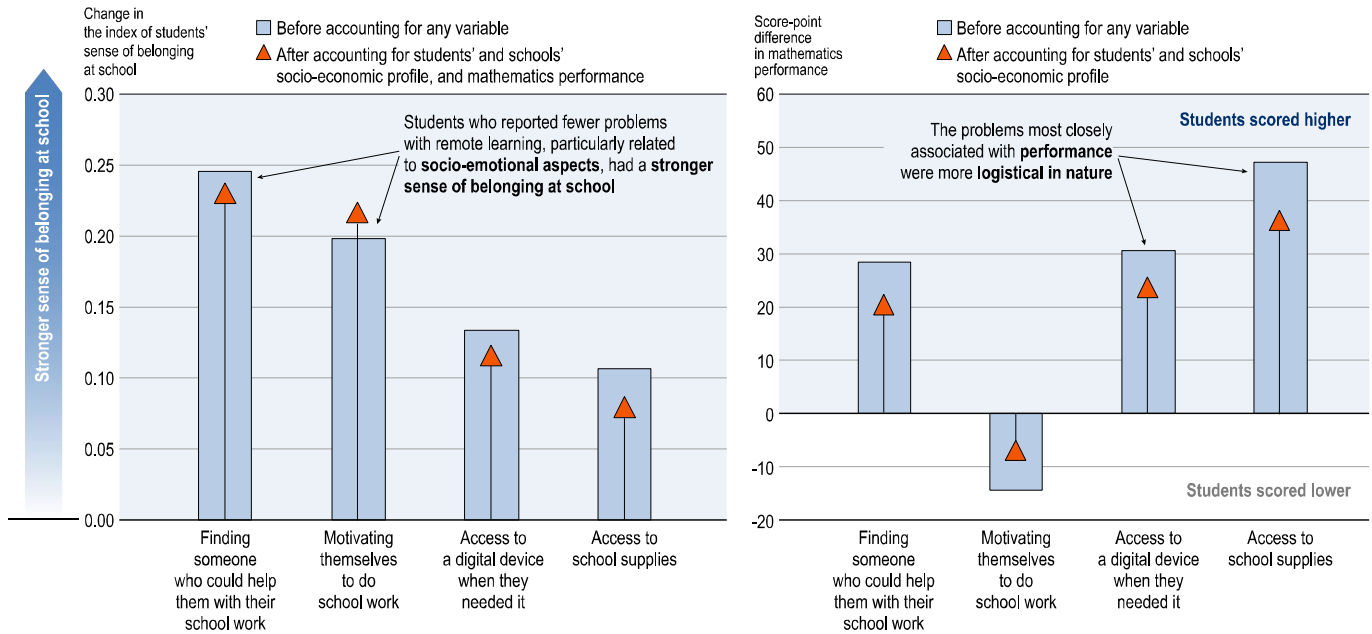
**Students who faced fewer problems with remote learning felt more connected to their school and performed better**

Students in education systems with fewer problems with remote learning reported a stronger sense of belonging at school (Table II.B1.2.45). Similar results were observed within countries/economies. On average across OECD countries, PISA 2022 found that students who had fewer problems with remote learning had a stronger sense of

belonging at school, before and after accounting for students' and schools' socio-economic profile and performance in mathematics (Table II.B1.2.35). More socio-emotional aspects, such as problems finding someone who could help with their schoolwork or motivating themselves to do schoolwork, were more strongly related to students' sense of belonging than to more logistical aspects, such as problems with Internet access or with access to a digital device when they needed it (Figure II.2.15).

**Figure II.2.15. Problems with remote learning, and sense of belonging and mathematics performance**

Change in the index of students' sense of belonging at school/in mathematics performance, when students faced the following problems only a few times or never when their school building was closed because of COVID-19; OECD average



Notes: Changes in the index of students' sense of belonging at school and score-point differences in mathematics are all statistically significant (see Annex A3).

The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Items are ranked in descending order of the change in the index of students' sense of belonging at school, after accounting for students' and schools' socio-economic profile, and mathematics performance.

Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

On average across OECD countries, high-performing students reported fewer problems with remote learning, such as problems with Internet access and problems with finding a quiet place to study (Figure II.2.15 and Tables II.B1.2.32, II.B1.2.33 and II.B1.2.34). Students with fewer problems scored eight points higher in mathematics than did students with more problems. The problems most closely related to performance were more logistical in nature: access to school supplies, finding time to study because of household responsibilities or access to a digital device when they needed it. The only aspect negatively related to mathematics performance was motivation: students who rarely had problems motivating themselves to do schoolwork scored lower in mathematics. A possible explanation is that those students are generally less motivated to engage in school so that the shift to distance learning was not seen as particularly problematic.

### Components of resilience: Providing support to maintain students' learning and well-being

Many countries were obliged to learn “on the job”, as the pandemic was progressing, how best to educate their students while safeguarding their students' health and psychological well-being. Inevitably, approaches to assisting

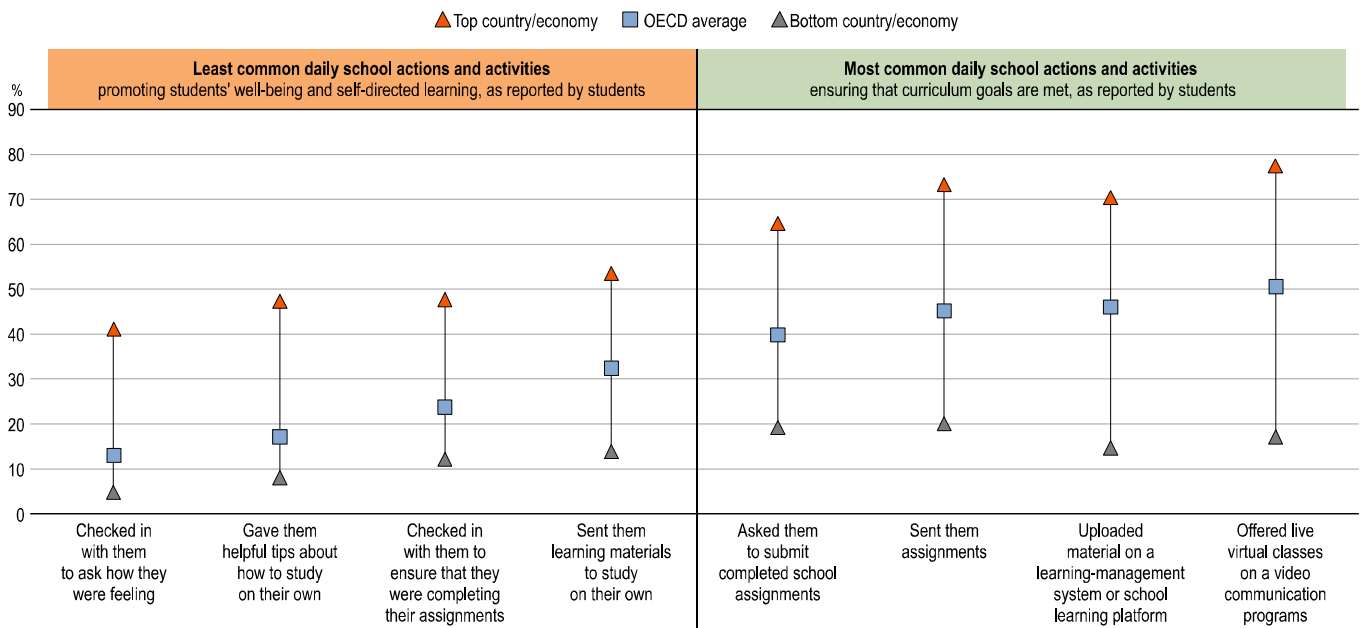
schools and students in managing the pandemic and distance learning varied widely across countries and, within countries, across individual schools (Lab, 2021<sup>[9]</sup>; OECD, 2021<sup>[1]</sup>; OECD, 2021<sup>[2]</sup>; Schleicher, 2020<sup>[10]</sup>; UNESCO Institute for Statistics UNICEF The World Bank OECD, 2022<sup>[3]</sup>).

**When their schools were closed, education staff focused more on curriculum goals than on students’ well-being**

PISA 2022 results for OECD countries show that the most common daily school actions and activities to support students ensured that curriculum goals are met, while actions to promote students’ well-being and self-directed learning skills were less common. On average, schools supported most students daily through live virtual classes on a video communication program (51% of students attended such schools), uploads of material on a learning-management system or school learning platform (46%), by sending assignments (45%) or asking for a submission of completed school assignments (40%; Figure II.2.16 and Table II.B1.2.36).

**Figure II.2.16. School actions and activities to maintain learning and well-being**

Percentage of students who reported that someone from their school did the following daily when their school building was closed because of COVID-19; OECD average



Items are ranked in ascending order of the percentage of students at the OECD average.  
Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

Other forms of daily support were less common, such as sending learning materials to students to study independently (33% of students attended such schools), checking in with students to ensure that they were completing their assignments (24%) or giving helpful tips about how to study independently (17%). Only around one in ten students (13%) was asked daily, by someone from the school, how they were feeling. Schools across education systems varied substantially in their daily support. For instance, in Hong Kong (China)\*, Macao (China), the Netherlands\* and Sweden schools checked in with less than 7% of students to ask them how they were feeling, while schools in Albania and Uzbekistan did so for around 40% of students.

Not only did schools in different countries/economies vary in how they supported students in their learning and well-being during school closures, but schools within the same countries/economies varied as well (Table II.B1.2.37). On

average across OECD countries and in all countries/economies except for Paraguay and Ukrainian regions (18 of 27), disadvantaged students were less likely than their advantaged peers to report that their school undertook actions and activities to maintain learning and well-being during the COVID-19 school closures. The widest socio-economic gaps were observed in Baku (Azerbaijan), Brunei Darussalam, Korea, Malaysia, Mongolia, Morocco and Qatar.

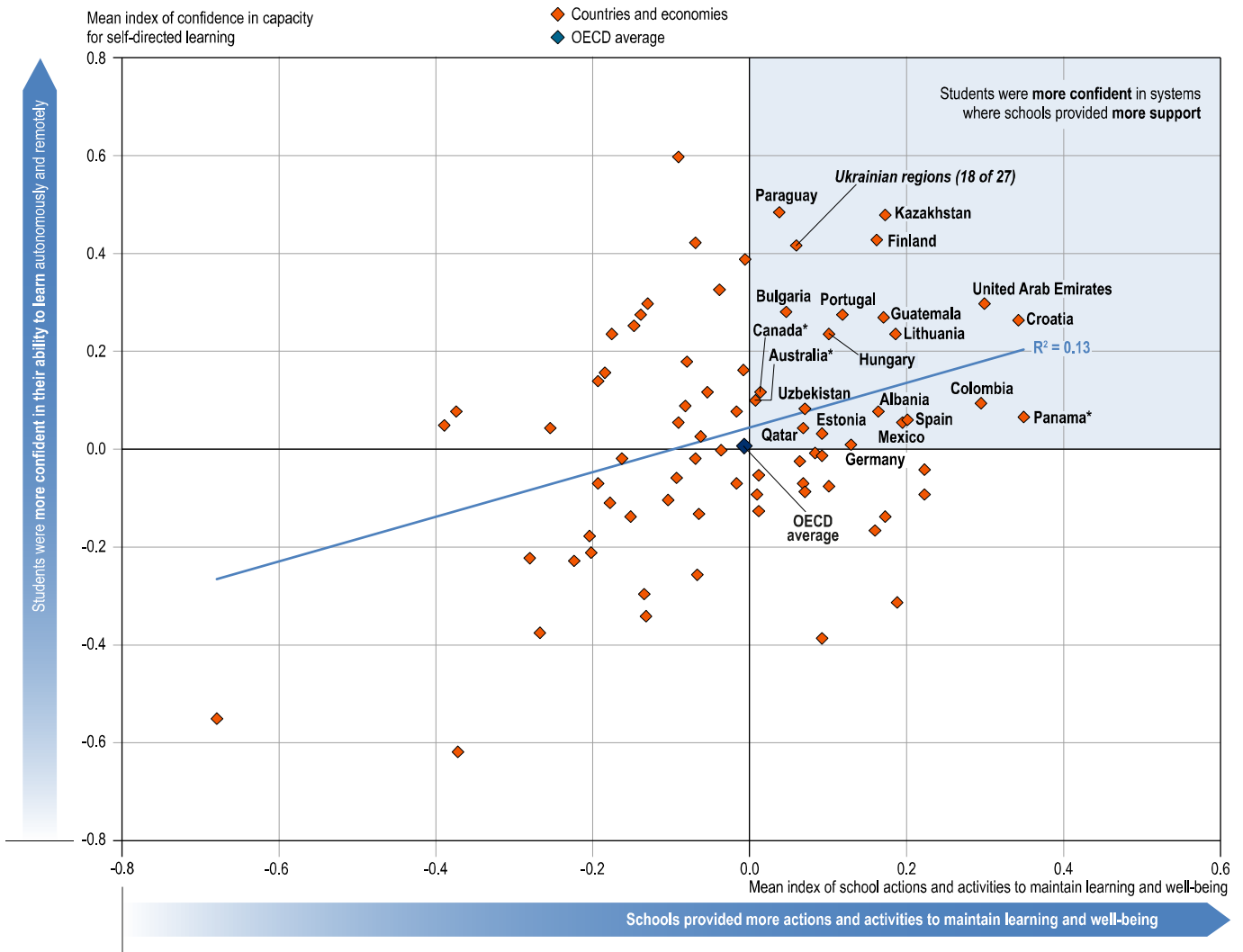
Moreover, girls reported more school actions and activities during the COVID-19 school closures than boys did, on average across OECD countries and in all participating countries/economies (Table II.B1.2.37). The only exceptions were Albania, Baku (Azerbaijan), the Czech Republic, Korea, Malta, Panama\*, Peru, the United Kingdom\* and Viet Nam, where no significant gender disparities were observed. On average across OECD countries, students in upper secondary education (ISCED-3) and those without an immigrant background reported more school activities and actions than students in lower secondary education (ISCED-2) and students with an immigrant background. Overall, findings were more mixed, with many education systems not showing any differences, while in Kazakhstan and Chinese Taipei students in lower secondary education reported more school actions and activities to maintain learning than did students in upper secondary school. In addition, in Australia\*, Brunei Darussalam, Canada\*, Estonia, Macao (China), New Zealand\*, Qatar and the United Arab Emirates students with an immigrant background were more likely than those without an immigrant background to report that schools took actions to maintain their learning during the COVID-19 school closures.

***Students were more confident in their capacity for self-directed learning in those systems that provided more support during school closures***

Students in education systems whose schools provided more actions and activities to maintain learning and well-being during school closures were more confident in their ability to learn autonomously and remotely if their school has to close again in the future (Figure II.2.17). In Finland, for example, students' confidence in their capacity for self-directed learning and reading performance was above the OECD average as well as the support actions and activities by schools that students reported for the time learning happened remotely. Over 30% of students in Finland reported that someone from their school daily or almost daily gave them helpful tips about how to study on their own during the COVID-19 school closures, which is almost double the share as on average across OECD countries.



**Figure II.2.17. Actions to maintain students’ learning and well-being, and students’ confidence in self-directed learning**



Notes: Positive values on the vertical axis mean students are more confident in their capacity for self-directed learning. Positive values on the horizontal axis mean schools provided more actions and activities to maintain learning. Only countries and economies that show positive values on both indices are shown in the figure. Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

**Schools’ actions to support students during closures were related to better performance and well-being**

On average across OECD countries, students who reported that schools did more to maintain students’ learning and well-being during school closures scored 6 to 9 points higher in mathematics, science and reading, after accounting for students’ and schools’ socio-economic profile (Tables II.B1.2.38, II.B1.2.39 and II.B1.2.40). In Brunei Darussalam and Thailand the difference in mathematics performance was as large as 15 score points.

Students who reported more support from schools during school closures also reported greater well-being than students who reported less support from their schools, on average across OECD countries and after accounting for students’ and schools’ socio-economic profile, and students’ performance in mathematics. More specifically, students who received greater support were more satisfied with life, felt more strongly that they belong at school and felt more

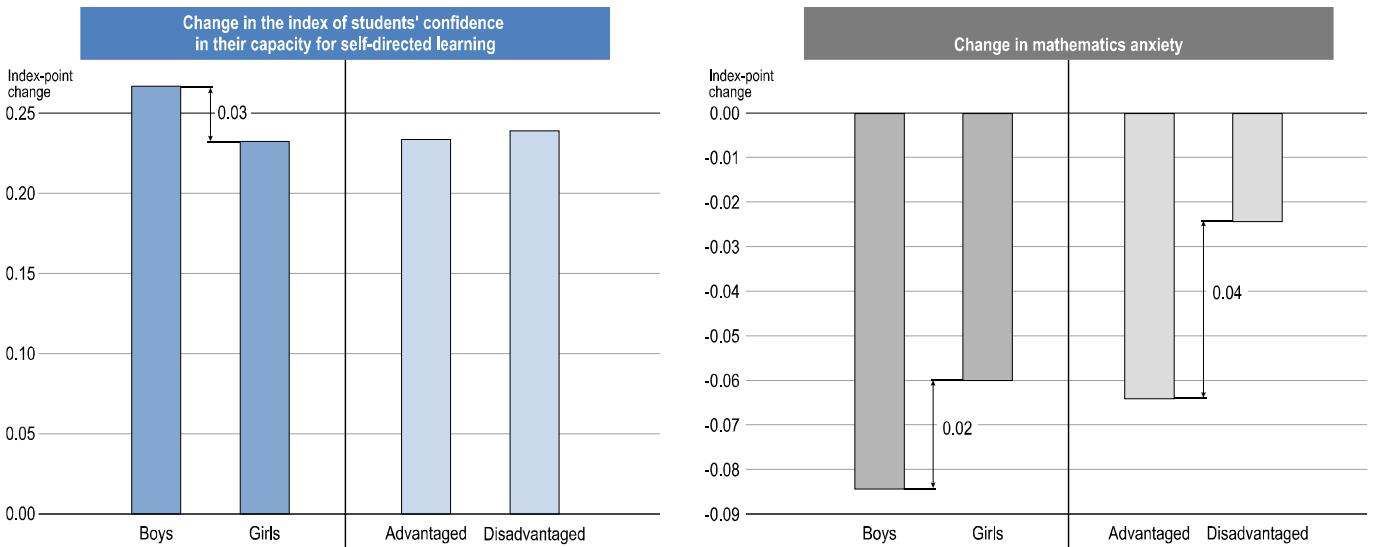
confident about their capacity for self-directed learning (Table II.B1.2.41). They also reported less anxiety towards mathematics.

There were large differences in type of support received. On average across OECD countries, students who received daily live virtual classes scored higher in mathematics and reported a greater sense of belonging (Tables II.B1.2.38 and II.B1.2.42). However, students who were daily asked how they were feeling or provided with helpful tips about how to study on their own by someone from their school scored lower in mathematics. These findings may indicate that schools targeted extra support from school staff to low-performing students or that low-performing students requested more support from school staff. After accounting for students' and schools' socio-economic profile, and mathematics performance, this kind of support was among the most strongly and positively related to students' well-being, including sense of belonging and life satisfaction.

On average across OECD countries in 2022, and among all groups of students, the relationship between school actions and activities to maintain learning and students' confidence in their capacity for self-directed learning was positive, while the association between school actions and students' anxiety towards mathematics was negative. However, there were significant, though small, differences between particular groups of students (Figure II.2.18). For instance, the relationships were somewhat stronger among boys than among girls. When considering self-directed learning, the gender gap, in favour of boys, was particularly large in Baku (Azerbaijan) and Malta; when considering mathematics anxiety, the difference, in favour of boys' attitudes towards mathematics (i.e. boys reported much less anxiety towards mathematics if their school undertook more of these actions), was largest in the Dominican Republic and Hong Kong (China) (Tables II.B1.2.43 and II.B1.2.44).

**Figure II.2.18. School actions to maintain learning and well-being, and selected student outcomes, by student characteristics**

Change in the index of students' confidence in their capacity for self-directed learning/index of mathematics anxiety, associated with a one-unit increase in the index of school actions and activities to maintain learning and well-being; OECD average



Notes: All values are statistically significant (see Annex A3).

Only differences between boys and girls and advantaged and disadvantaged students that are statistically significant are shown in the figure.

A socio-economically disadvantaged (advantaged) student is a student in the bottom (top) quarter of the PISA index of economic, social and cultural status (ESCS) in his or her own country/economy.

Source: OECD, PISA 2022 Database, Annex B1, Chapter 2.

On average across OECD countries, the relationship between schools' actions to maintain learning and mathematics anxiety was considerably stronger among socio-economically advantaged students than among disadvantaged students (Figure II.2.18 and Table II.B1.2.44). The difference in the strength of the relationship with mathematics anxiety, in favour of advantaged students (i.e. advantaged students reported much less anxiety towards mathematics if their school undertook more of these actions), was particularly large in Hungary, Jamaica\* and the Ukrainian regions (18 of 27) even though the relationship was not observed in the majority of education systems. Across OECD countries, the relationships with students' confidence in their capacity for self-directed learning and with mathematics anxiety were similar in magnitude between immigrant and non-immigrant students and between those in upper and lower secondary schools.

## Components of resilience: Designing and implementing emergency policies

In times of crisis, countries and schools benefit from prior investments made in improving school policies and practices, and creating a nurturing, safe environment for students (see Chapters 3 to 6). Nonetheless, specific emergency measures are sometimes needed to weather sudden disruptions.

### ***Some countries used the disruption caused by the pandemic as an opportunity to change policies about digitalisation in education***

Table II.2.1 shows the percentage of PISA 2022-participating countries/economies with available system-level data on education responses to the COVID-19 school closures<sup>2</sup> (See Annex B3 for more information). About half of OECD countries (52%) reported that they continued standardised testing in the 2020/21 academic year; most OECD countries (84%) reported that they continued standardised testing in 2021/22. Among the countries that implemented standardised testing, the vast majority assessed mathematics (95%) and reading (95%) but only two-thirds assessed science (65%). This trend is consistent across all PISA 2022-participating countries/economies with available system-level data (89% assessed mathematics, 91% assessed reading, and 65% assessed science).

Most countries/economies also reported undertaking studies about the impact of COVID-19 on the mental health and well-being of students (85% of OECD countries; 63% of all countries/economies) (Table II.2.1). However, only 46% of OECD countries and 34% of all countries/economies reported studying the impact of COVID-19 on non-cognitive skills. Given the inter-related development of cognitive and non-cognitive skills (OECD, 2021<sup>[30]</sup>), countries/economies that examined both cognitive and non-cognitive skills may have a more comprehensive understanding of the impact of COVID-19 on students' learning outcomes. These countries include Colombia, France, Korea, Latvia\*, the Netherlands\*, Norway, Portugal and Slovenia. See Annex B3 (Table B3.3.3.) for more information.

The three learning-recovery policies that a large number of countries/economies implemented during the 2020/21 school year were (Table II.2.1): providing psychological and mental health support to students (73% of OECD countries; 68% of all countries/economies), offering structured pedagogy (63% of OECD countries; 71% of all countries/economies) and providing teacher training in how to support students' mental health and well-being (61% of OECD countries; 65% of all countries/economies). The results remained consistent during the 2021/22 school year with one exception: early warning systems to identify students at risk of dropping out replaced teacher training in how to support students' mental health as one of the top three policies implemented across all countries/economies. A relatively small percentage of countries/economies offered individualised self-learning programmes across both school years (OECD countries/all countries: 22%/39% for the school year 2020/21 or 2021 and 10%/30% for the school year 2021/22 or 2022). The biggest difference in learning-recovery policies observed between OECD countries and all countries/economies is adjusting the curriculum (17% of OECD countries; 43% of all countries/economies).

Various countries/economies around the globe used the COVID-19 disruption as an opportunity to change policies concerning digitalisation in education (Table II.2.1). OECD countries that reported that they changed (or plan to

change) digitalisation policies are Austria, the French Community of Belgium<sup>3</sup>, Costa Rica, Denmark\*, Israel, Italy, Japan, Korea, Lithuania, Poland, Portugal, the Slovak Republic, Wales (the United Kingdom\*) and the United States\*. Yet most countries/economies reported that they have not changed the regulatory framework governing digital education and that there are no plans to do so (57% of OECD countries; 30% of all countries/economies). Similar results were also reported for the institutional framework governing digital education (57% of OECD countries; 34% of all countries/economies). See Annex B3 (Table B3.3.2) for more information.

**Table II.2.1. How education systems supported students and schools during the pandemic**

Based on system-level information

		OECD countries		All countries and economies	
		Yes, at the national/central level.	Schools/districts/the most local level of governance could decide at their own discretion.	Yes, at the national/central level.	Schools/districts/the most local level of governance could decide at their own discretion.
		%	%	%	%
<b>Tracking students' absence during the pandemic (2019/20, 2020/21, and 2021/22)</b>	Has your education system collected statistics on <u>student absence</u> over the three school years covered by the pandemic?	50	23	57	25
<b>Assessment of impact of COVID-19 crisis on education (2020/21 and 2021/22)</b>	Did <u>standardised testing</u> programmes continue to take place in 2020-21 / 2021-22?	52 / 84	4 / 0	60 / 84	7 / 4
	Have there been studies about the impact of school closures on learning outcomes (standardised <u>national</u> assessment)?	52	0	46	5
	Have there been studies about the impact of school closures on learning outcomes (standardised <u>subnational</u> assessment)?	13	8	20	7
	Have there been studies about the impact of COVID on <u>mental health and well-being of students</u> (levels of stress, anxiety and depression)?	85	0	63	5
	Have there been studies about the impact of COVID on <u>non-cognitive skills</u> ?	46	4	34	7
	Has <u>mathematics</u> been assessed in a standardised way?	95	0	89	4
	Has <u>reading</u> been assessed in a standardised way?	95	0	91	4
	Have <u>sciences</u> been assessed in a standardised way?	65	0	65	6
<b>Changes in education policies/regulations to mitigate the impact of learning loss/disruption and student well-being (school year 2020/21 or 2021/school year 2021/22 or 2022)</b>	Early Warning Systems to identify students at <u>risk of dropping out</u>	41 / 47	18 / 21	58 / 64	17 / 19
	<u>Adjustments to the curriculum</u> in any subject or grade	33 / 17	23 / 21	52 / 43	16 / 15
	Increased <u>instruction time</u> (e.g. through summer schools, extended school day, school week or academic year)	43 / 25	20 / 13	41 / 31	18 / 15
	Individualised <u>self-learning programmes</u> (computer-assisted or pencil-and-paper based)	22 / 10	33 / 33	39 / 30	26 / 26
	<u>Accelerated education programmes</u> (covering instructional content in a shorter timeframe) or catch-up programmes for students who dropped out of school	46 / 19	15 / 19	50 / 36	18 / 19
	Psychosocial and <u>mental health support</u> to students (e.g. counselling)	73 / 59	23 / 23	68 / 63	24 / 23
	Additional <u>school nutrition services</u> (e.g. school feeding programmes, free or discount on school meals) strengthened/provided	26 / 30	13 / 15	43 / 42	16 / 19
	<u>Structured pedagogy</u> (e.g. programmes to improve instruction with teachers' guides, lesson plans, student materials and teacher training)	63 / 61	19 / 17	71 / 69	11 / 11
	<u>Teacher training</u> in how to support students' mental health and well-being	61 / 50	25 / 27	65 / 62	21 / 21
	<u>Recruitment of specific personnel</u> to support students' mental health and well-being (e.g. psychologists, counsellors)	41 / 26	34 / 39	41 / 42	31 / 30

Note: Only countries and economies with available data from the Survey on National Education Responses to COVID-19 School Closures are shown. The data in this table correspond to lower secondary education.

Source: OECD, PISA 2022 Database, Annex B3, Tables B3.3.1, B3.3.3, and B3.3.4.

**Table II.2.2. How learning continued when schools were closed figures and tables**

Figure II.2.1	How learning continued when schools were closed as covered in PISA 2022
Figure II.2.2	COVID-19 school closures and mathematics performance
Figure II.2.3	COVID-19 school closures and change between 2018 and 2022 in sense of belonging
Figure II.2.4	Change between 2018 and 2022 in expectation of a career in health and ICT
Figure II.2.5	Students' confidence in self-directed learning
Figure II.2.6	Social and emotional skills, and mathematics performance
Figure II.2.7	Persistence, curiosity and learning resources during COVID-19 school closures
Figure II.2.8	Reading performance and students' confidence in their capacity for self-directed learning
Figure II.2.9	Perceived preparedness for remote instruction, by actions taken
Figure II.2.10	Teacher support and students' loneliness
Figure II.2.11	Teacher support and students' confidence in their capacity for self-directed learning
Figure II.2.12	Remote learning, mathematics performance and confidence in self-directed learning
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Figure II.2.16	School actions and activities to maintain learning and well-being
Figure II.2.17	Actions to maintain students' learning and well-being, and students' confidence in self-directed learning
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Table II.2.1	How education systems supported students and schools during the pandemic

*StatLink* <https://stat.link/5nrsfi>

## Notes

<sup>1</sup> In this chapter “school closure” refers to the period that school buildings were closed to students.

<sup>2</sup> This information is from the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Children's Fund (UNICEF), the World Bank, and the Organisation for Economic Co-operation and Development (OECD) Survey on National Education Responses to COVID-19 School Closures. The mission of this survey was to collect information on national education responses to school closures related to the COVID-19 pandemic.

<sup>3</sup> Data for the Flemish Community of Belgium were not available in the Survey on National Education Responses to COVID-19 School Closures.

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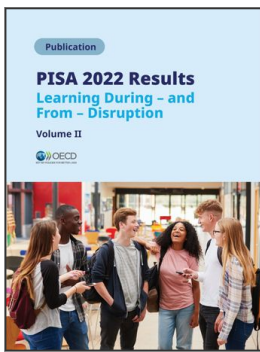
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