#124

PISA in Focus

# Managing screen time: how to protect and equip students against distraction

Programme for International Student Assessment

OECD
BETTER POLICIES FOR BETTER LIVES

# Managing screen time: how to protect and equip students against distraction

- On average across OECD countries, 30% of students are distracted by using digital devices in every or most of their mathematics lessons. In Argentina, Uruguay and Chile, more than half of students have this level of distraction. However, in Japan and Korea, the percentage is less than 10%.
- Students who spend one to five hours per day on digital devices for learning at school achieve 20 PISA score points higher in mathematics than those who spend no time on such devices. In contrast, students spending over one hour on digital devices for leisure at school score more than 9 points lower in mathematics scores and report a lower sense of belonging at school than students who spend no time on leisure digital activities.
- On average across OECD countries, three-quarters of students spend more than one hour per weekday browsing social networks. In countries like Chile, Denmark*, Ireland*, Italy and Uruguay the proportion tops 80%. Panama* is the country with the lowest percentage – still 48%.
- During weekdays, most leisure activities involving digital devices are associated with lower student performance and increased distraction, except when they consume minimal time. For instance, students who spend over an hour per weekday browsing social networks, communicating and sharing content, or using the Internet for fun, score between 5 and 20 points lower in mathematics than those who spend one hour or less.
- Students with higher self-perceived ICT competence in PISA are less likely to report being easily distracted, even after accounting for students and schools' socio-economic profile. In addition, teachers who engaged in professional development related to ICT skills for teaching were less likely to report student distraction due to digital device use in their classrooms.

The increasing use of digital technologies and devices has raised questions about their impact on the health and development of children.[1] How students use digital resources, and the types of devices they rely on, shape their susceptibility to distractions while using digital technology. Indeed, students can easily be tempted to multitask, shift their attention to other information or tools available on devices, or browse the Internet for non-academic activities, such as using social media.[2] Furthermore, students can potentially struggle to navigate digital environments, leading to difficulties in maintaining concentration or affecting their cognitive development as well as their well-being[3].

This PISA in Focus explores how much time students use digital devices both at school and outside of school, on weekdays and weekends. It examines the reasons students use digital devices and how this relates to their performance in mathematics, sense of belonging at school and the extent to which they become distracted.

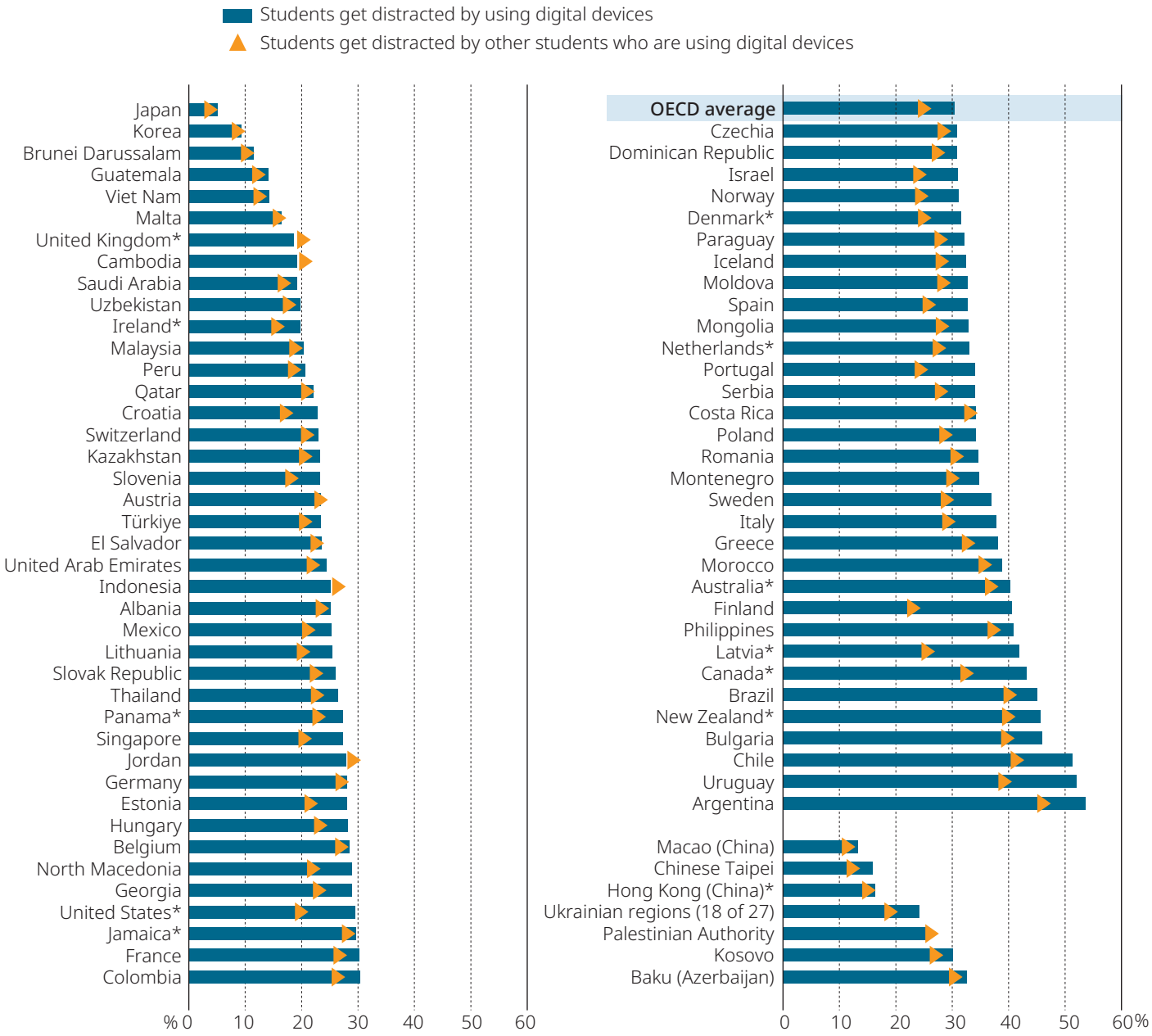
## How many students get distracted using digital devices in class?

Nearly one in three students, on average across OECD countries, reported being distracted using digital devices in most or every mathematics lesson. Equally important, around one in four students indicated they get distracted in most or every lesson by other students who are using digital devices.

Students who reported being distracted by using digital devices in class or by other students using them tend to perform lower in mathematics than students who reported that this never or rarely happens[4].

## Nearly one in three students gets distracted using digital devices in class in OECD countries

*Percentage of students who reported that the following happens in every or in most of their mathematics lessons*




*Countries and economies are ranked in ascending order of the percentage of students who reported that they get distracted by using digital devices.*
**Source**: OECD, PISA 2022 Report - Volume II, Figure II.3.4.
StatLink https://stat.link/zqer74

## How does the use of digital devices in school relate to student performance?

The Programme for International Student Assessment (PISA) 2022 results show that students who frequently use digital devices in mathematics classes are more likely to be distracted[5]. The assessment asked students to report the number of hours they spend per day on digital devices for learning and leisure activities at school. On average across OECD countries, the most prevalent response is "up to one hour" for both learning and leisure purposes. Some 31% of students spend up to one hour daily on digital devices for learning activities at school, while 35% reported the same for leisure. Only 14% of

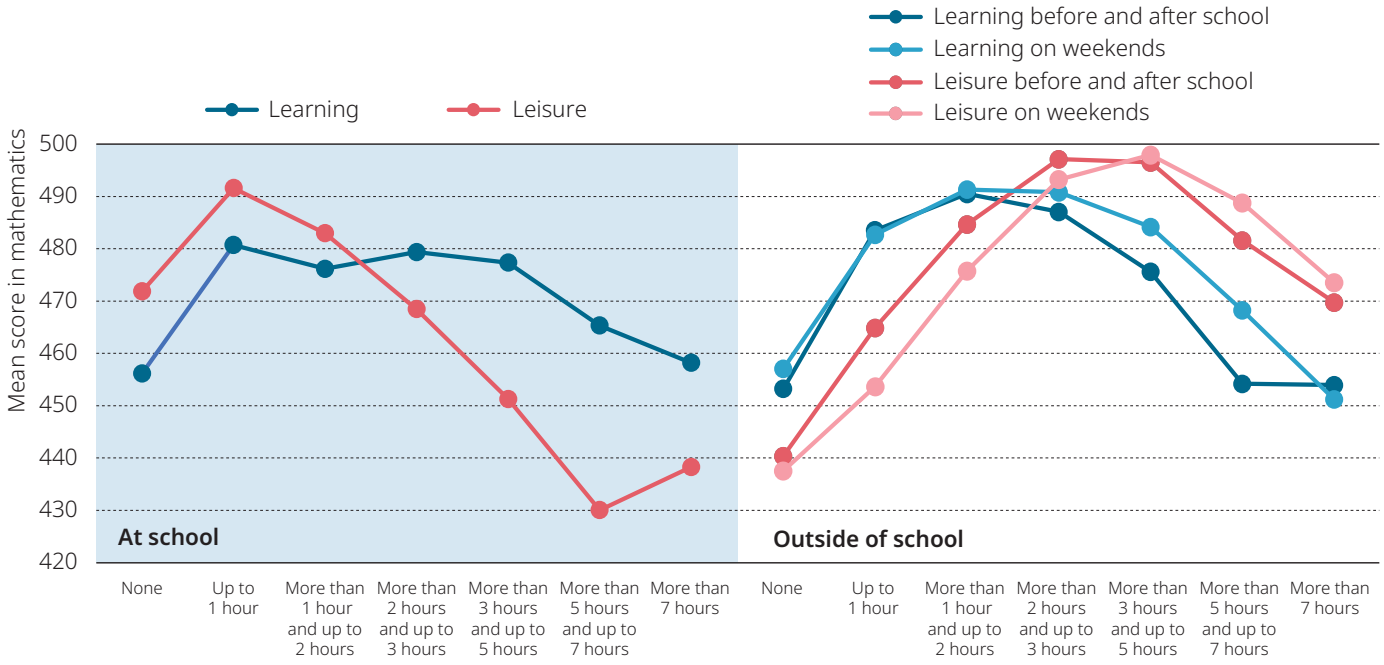
students spend no time on digital devices for learning at school, while 30% reported the same for leisure. Some 56% of students spend more than one hour per day on learning activities at school and 35% spend more than one hour per day on leisure activities at school.

In Cambodia, Paraguay, Guatemala, Germany, and Vietnam (in descending order of the proportion of students), more than 30% of students spend no time on digital devices for learning at school. In comparison, in Iceland, Singapore and Finland (in ascending order), less than 5% of students reported the same[6]. In Viet Nam, Malta, Japan, Cambodia, Guatemala, Paraguay, Brunei Darussalam and Peru (in descending order), more than 50% of students spend no time on digital devices for leisure at school. In contrast, they were less than 20% in Uruguay, Portugal, Ukrainian regions (18 of 27), Bulgaria, Poland, Czechia, Romania, Estonia, Latvia*, Hungary and Thailand (in ascending order).

The relationship between the students' digital device usage at school and their mathematics performance and well-being reveals distinct patterns between learning and leisure purposes. When it comes to learning activities, moderate use of digital devices in school is related to higher performance and greater sense of belonging at school. Students who spent up to 5 hours per day on digital devices for learning activities in school scored at least 20 PISA points higher in mathematics and reported greater sense of belonging at school than students who spent no time, on average across OECD countries. However, students who spent between 5 and 7 hours daily on digital devices for learning activities in school scored 12 points lower than students who spent between 3 and 5 hours per day[7].

## Students score better in mathematics and report a stronger sense of belonging at school when they spend moderate time using devices for learning at school, but not when engaging in leisure activities [1/2]

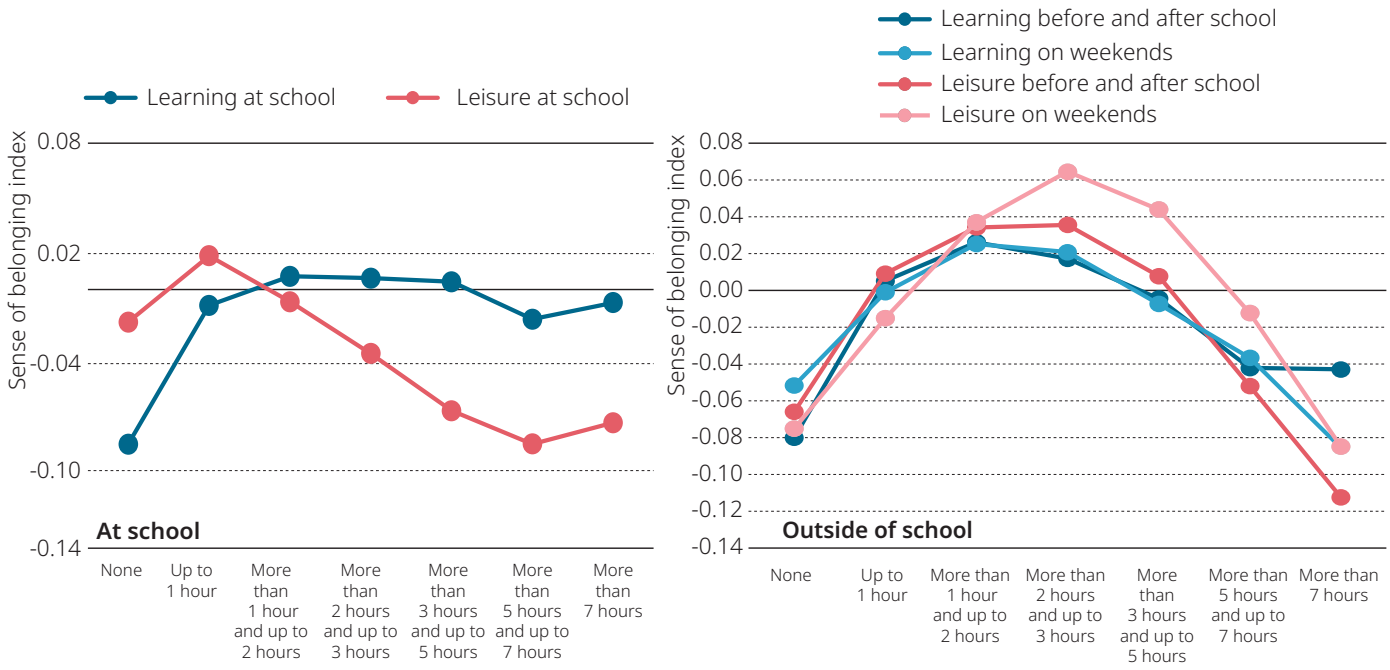
*Based on students' reports; OECD average*




**Note**: Differences between categories are all statistically significant.
**Source**: OECD, PISA 2022 Database, https://webfs.oecd.org/pisa/PIF_124_Figures_Tables.xlsx.

# Students score better in mathematics and report a stronger sense of belonging at school when they spend moderate time using devices for learning at school, but not when engaging in leisure activities [2/2]

*Based on students' reports; OECD average*




**Note**: Differences between categories are all statistically significant.
**Source**: OECD, PISA 2022 Database, https://webfs.oecd.org/pisa/PIF_124_Figures_Tables.xlsx.

In contrast, students who spent more than an hour on digital devices for leisure scored lower in mathematics and displayed a lower sense of belonging at school. Students who spent up to one hour per day scored 20 points higher in mathematics and reported a greater sense of belonging than students who spent no time, on average across OECD countries[8]. Students are likely to rely on their smartphones for leisure activities at school and 15-year-olds who use smartphones more frequently reported that they are likely to become distracted while using digital devices in mathematics lessons[9]. However, the use of educational software has a more moderate negative association with students' concentration[10], suggesting that the use of digital resources with pedagogical intent makes a difference, although it does not eliminate distractions.

A similar pattern is observed outside of school: moderate use of digital devices for learning (up to three hours per weekend day) is related to higher performance and greater sense of belonging at school, while spending up to 5 hours per weekend day on devices for leisure also has a positive correlation with performance. In contrast, spending up to 3 hours per weekday and weekend day is positively associated with sense of belonging at school, but students who spend more than three hours report a lower sense of belonging at school.

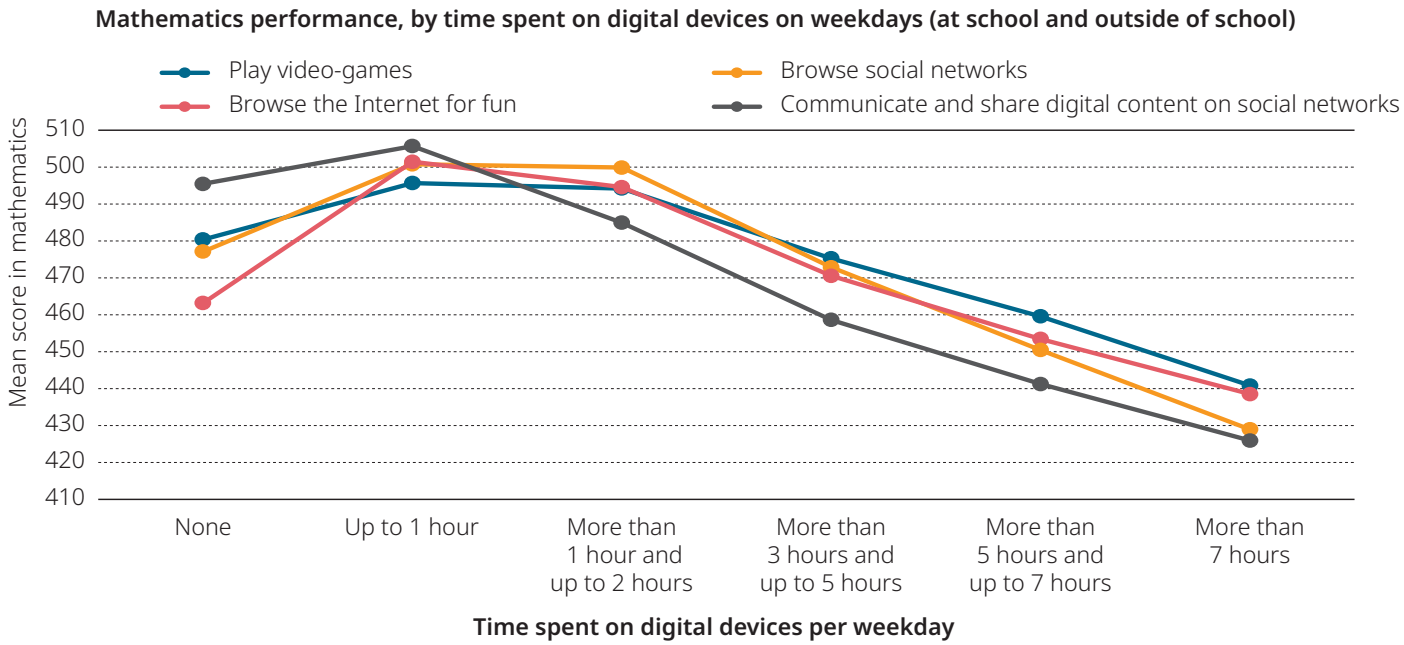
These findings are in line with the "Goldilocks hypothesis"[11], suggesting that moderate use of digital devices is not intrinsically harmful and can even be positively associated with performance. It is the overuse or misuse of digital devices that is negatively associated with performance. In particular, the correlation on digital device use for leisure implies that high performing students demonstrate self-control over the use of digital devices, especially during school hours.

## How does the use of digital devices for leisure relate to student mathematics performance and distraction?

Engaging in leisure activities on digital devices typically correlates with lower student performance and increased distraction, unless these activities are limited in duration, especially on weekdays rather than on weekends. For example, across OECD countries, students who spent more than one hour per weekday on activities such as browsing social networks (75% of students[12]), browsing the Internet for fun (66%), and communicating and sharing digital content (55%) scored between 5 and 20 points lower in mathematics than students engaged in such activities for up to one hour per day, even after accounting for socio-economic factors. Only students who play video games for up to three hours per day display higher student performance in mathematics than those who engage less than one hour in this activity. The type of video games students play also shapes their academic performance. Playing collaborative online games is particularly negatively associated with students' achievement (as they may be more likely to play for excessively long periods).[13] In contrast, single-player games tend to be related to a performance advantage, particularly for those who play occasionally. Further research highlights that video gaming can support several cognitive skills (i.e., executive control, visual and attentional skills) and underpin different approaches to science inquiry[14].

## Students who spend more than one hour daily on various leisure activities online score lower in mathematics [1/2]

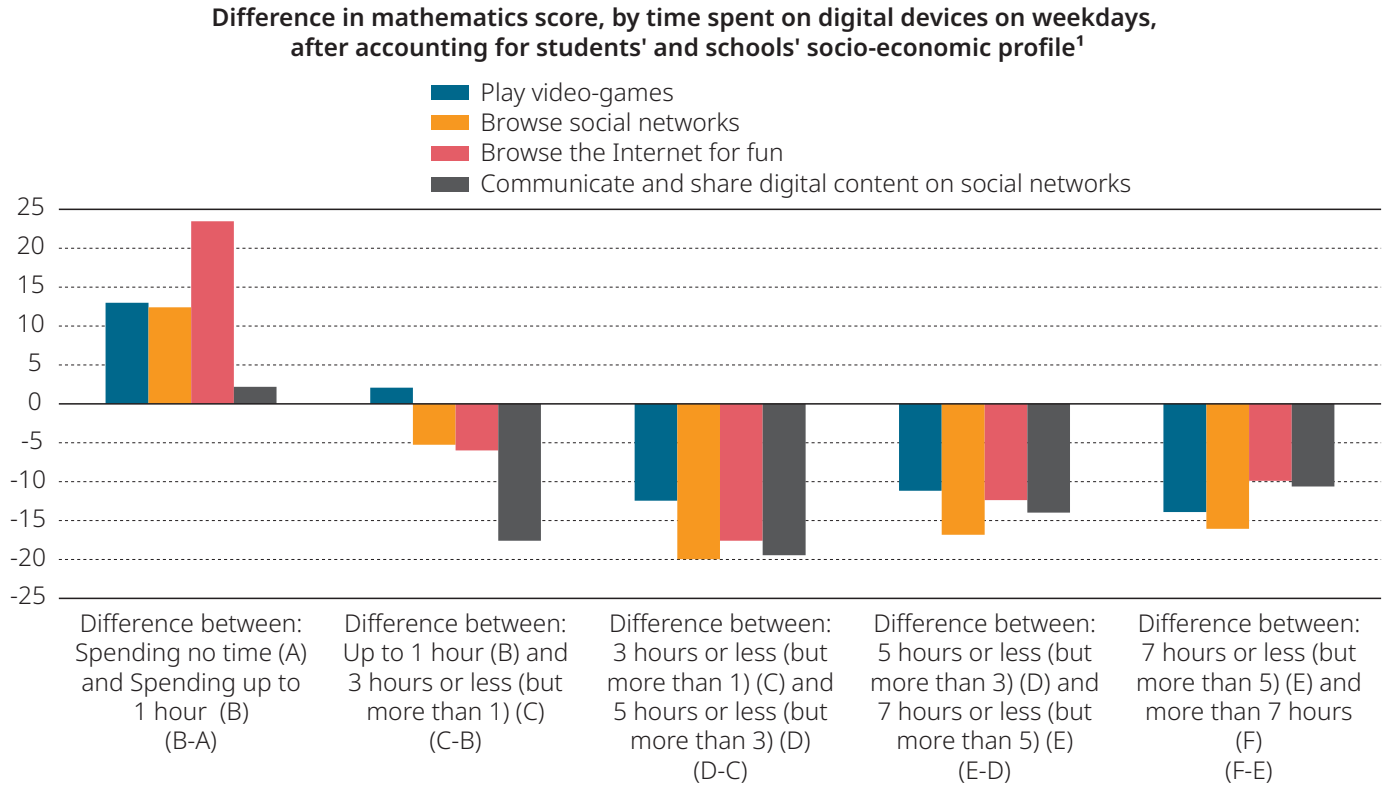
*Based on students' reports; OECD average*




**Note**: Differences between categories are all statistically significant.
**Source**: OECD, PISA 2022 Database, https://webfs.oecd.org/pisa/PIF_124_Figures_Tables.xlsx.

## Students who spend more than one hour daily on various leisure activities online score lower in mathematics [2/2]

*Based on students' reports; OECD average*



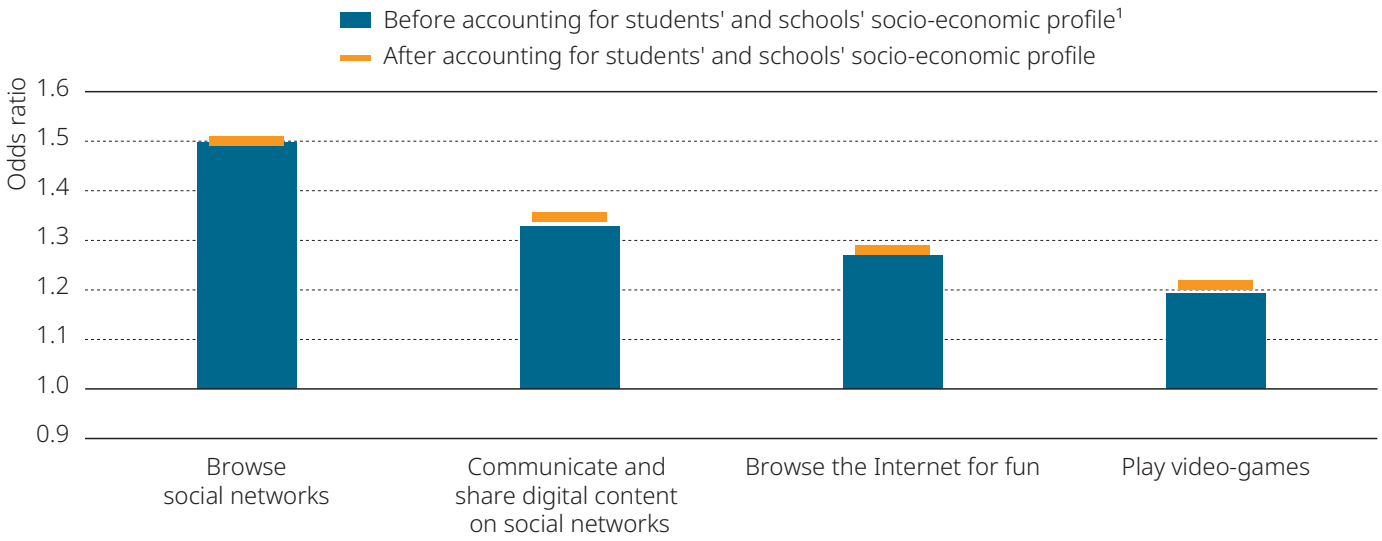

1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
**Note**: All score-point differences are statistically significant.
**Source**: OECD, PISA 2022 Database, https://webfs.oecd.org/pisa/PIF_124_Figures_Tables.xlsx.

Students who browse social networks, browse the Internet for fun, and communicate and share digital content up to one hour daily perform better than those who do not engage at all in such activities. These online pursuits have become widespread, with fewer than one in ten students reporting not browsing the Internet for fun or not browsing social networks. Almost all 15-year-old students in OECD countries (98% on average) have a smartphone of their own at home[15]. Low-performing students may, however, see their access to smartphones restricted by their parents or attend schools that forbid access to smartphones to limit student distraction and hopefully lift performance. PISA 2022 data reveal that on average across OECD countries, as well as in Brunei Darussalam, Czechia, Finland, Indonesia, Japan, Malta, Singapore, Switzerland and the United Arab Emirates, school phone bans tend to be applied in schools where students performed lower, even after accounting for students' and schools' socio-economic profile.[16]

Students who spend more time on digital devices for a variety of leisure activities are also more likely to "agree" or "strongly agree" with being easily distracted. On average across OECD countries, 54% of students reported being easily distracted, especially among those who spend more than an hour per weekday browsing social networks or sharing digital content, as well as browsing the Internet for fun.

## Students who spend more time on digital devices for leisure activities get more distracted

*Change in the likelihood of students being easily distracted when they reported that they used digital devices for more than an hour per weekday for each of the following purposes; OECD average*




1. The socio-economic profile is measured by the PISA index of economic, social and cultural status.
**Note**: All odds ratio are statistically significant.
**Source**: OECD, PISA 2022 Database, https://webfs.oecd.org/pisa/PIF_124_Figures_Tables.xlsx.

## How to protect and equip students to navigate digital environments?

PISA 2022 results highlight the importance of finding effective ways to limit the distraction caused by using digital devices at school and beyond.

Many schools have already introduced guidelines to address the distraction issue[17]. Whether these are written statements about the general use of devices, rules established by teachers, or programmes to prepare students for responsible Internet behaviour, these types of school policies show little association with the likelihood of students becoming distracted due to digital devices in class. The content and design of such rules play a critical role in determining their effectiveness. Schools and teachers also need the time and capacity to enforce such rules. While school phone bans may reduce distractions in class, PISA 2022 results suggest they are not always effectively enforced. In addition, banning mobile phones at school may also induce higher usage of mobile phones at home. When mobile phones are banned at their school, students in some countries are less likely to turn off notifications from social networks and apps on their digital devices when going to sleep.[18]

School policies that improve students' digital skills and behaviours can equip students against distraction. PISA 2022 analyses show that students with higher self-perceived competence in Information and Communication Technology (ICT) are less likely to report being easily distracted[19], even after accounting for students and schools' socio-economic profile. Students also appear to be less distracted using digital devices when they switch off notifications from social networks and apps on their devices during class, when they do not have their digital devices open in class to take notes or search for information, and when they do not feel pressured to be online and answer messages while in class.[20]

Tackling digital divides in use to ensure all children are well-equipped to navigate in a digital environment requires attention to the design of guidelines and regulations, adapting curricular frameworks for digital education, and designing funding mechanisms that support an equitable distribution of quality digital infrastructure[21]. Strengthening school-family partnerships, providing clear communication and nuanced recommendations to parents on the challenges and opportunities of digital environments for their children, and lifting adults' digital skills can support more effective parental engagement in their children's interactions with the digital environments.

PISA 2022 results also show that students who report stronger family support are less likely to be easily distracted in general[22].

Crucially, building students' digital competence and ability to navigate digital environments requires well-prepared teachers. Teachers' initial education and professional development shape teachers' self-efficacy and capacity to limit distractions in their classes due to digital device use. In OECD countries with available data, PISA 2022 results show that mathematics teachers who engaged in professional development related to ICT skills for teaching in the previous year reported fewer student distractions due to the use of digital devices by other students in the class. Evidence from TALIS 2018 also suggests that teachers who had training in student behaviour and classroom management as part of their formal training also reported higher self-efficacy[23]. The content of professional development thus matters for teaching quality and designing a disciplinary climate that enables students to concentrate in the presence of digital devices.

## The bottom line

The PISA 2022 findings reveal that 15-year-old students who use digital devices moderately for learning at school tend to perform better and report a greater sense of belonging at school. However, those who spend over an hour each day using them for leisure tend to have lower maths scores and lower sense of belonging at school. On top of this, they are more likely to be easily distracted.

The findings highlight the need to reduce distractions from digital devices in schools and beyond. This can be achieved through school policies that improve students' digital skills and behaviours, along with providing teachers training on teaching with technology.

## Notes

* Caution is required when interpreting estimates for countries/economies with an asterisk because one or more PISA sampling standards listed below were not met. See Reader's Guide of PISA 2022 Results Volume II for further details.

1. Burns and Gottschalk, 2020[13].
2. Amez and Baert, 2020[4]; Beland and Murphy, 2016[5]; UNESCO, 2023[6].
3. Bediou, Rich and Bavelier, 2020[14].
4. Table II.B1.3.13.
5. The analysis accounts for students' and schools' socio-economic profile and students' mathematics performance (Figure II.5.9).
6. Table II.B1.5.62.
7. After accounting for students' and schools' socio-economic profile, students who spent between 5 and 7 hours per day on digital devices for learning activities in school scored 10 points lower. Students who spent over 7 hours per day on digital devices for learning activities in school scored even lower.
8. The difference in performance is equal to 10 points even after accounting for students' and schools' socio-economic profile; and a positive relationship is observed in around half of all systems with available data (Table II.B1.5.67).
9. Table II.B1.5.44.
10. Table II.B1.5.42.
11. Przybylski and Weinstein, 2017[3].
12. See Table 5 for the frequencies of each category.
13. Borgonovi, 2016[12].
14. Avvisati and Borgonovi, 2023[8].
15. Table 39.
16. Table II.B1.5.38.
17. Table II.B1.5.35.
18. Table II.B1.5.45.
19. Table 37.
20. Table II.B1.5.44.
21. OECD, 2023[1]; OECD, 2023[2].
22. Table 38.
23. OECD, 2019[11].

# For more information

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**See:**


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