Gender, Education and Skills

Gender Differences in PISA 2022 Performance in Latin America and the Caribbean

Marta Encinas-Martín and Samira Abraham

OECD
BETTER POLICIES FOR BETTER LIVES

Gender, Education and Skills

GENDER DIFFERENCES IN PISA 2022 PERFORMANCE IN LATIN AMERICA AND THE CARIBBEAN

Marta Encinas-Martín and Samira Abraham

OECD
BETTER POLICIES FOR BETTER LIVES

INTRODUCTION

In 2022, a total of **14 countries from the Latin American and Caribbean (LAC) region participated in the Programme for International Student Assessment (PISA).** Among these, El Salvador, Guatemala, Jamaica, and Paraguay were notable first-time participants. However, it's important to mention that both Guatemala and Paraguay had previously taken part in the PISA for Development initiative, which aimed to enhance educational outcomes in developing countries (OECD, 2023). The growing LAC participation, with four additional countries since PISA 2018, enables a deeper understanding and assessment of the knowledge and skills acquired by 15-year-olds in the region, both globally and regionally.

The PISA 2022 assessment emerged as a particularly crucial evaluation, not only because it followed the unprecedented global school closures brought about by the COVID-19 pandemic, but also because it illuminated a deeper learning crisis that had been exacerbated by these disruptions. The findings from PISA 2022 revealed a notable decline in the performance of OECD countries in key areas such as mathematics and reading. Specifically, scores fell by 15 points in mathematics and 10 points in reading, while science scores remained relatively stable. This marked decline is especially significant considering that historically, the OECD average has fluctuated by no more than four points in mathematics or five points in reading between consecutive assessments. The magnitude of these drops is unprecedented and suggests a widespread negative impact on student learning outcomes due to the pandemic.

IN 2022, 4 OUT OF 14 PARTICIPATING LAC COUNTRIES WERE FIRST-TIME ENTRANTS, INCLUDING EL SALVADOR AND JAMAICA.

LAC COUNTRIES HAD AN AVERAGE OF 72 WEEKS OF SCHOOL CLOSURES, CAUSING DECLINES IN READING AND MATHEMATICS PERFORMANCE.

While it is crucial to acknowledge the impact of the COVID-19 pandemic on these results, it is equally important to note that the declines in reading and science performance were already observed before the pandemic (OECD, 2023). **Latin America and the Caribbean, in particular, faced some of the longest school closures in the world, averaging around 72 weeks, resulting in poor educational outcomes,** reflected in the generalised low performance and a significant lack of proficiency among students across various subjects compared to their OECD counterparts. These outcomes underscore the urgent need for effective educational recovery strategies and highlight the necessity for more equitable education systems within LAC countries (OECD, 2023).

From a gender perspective, the findings of PISA 2022 were particularly interesting and revealed essential trends. There were notable similarities in both LAC and OECD countries: boys generally outperformed girls in mathematics, while girls tended to perform better than boys in reading across all participating countries. However, the gender gap in performance was smaller in LAC countries in terms of both reading and mathematics on average. On the other hand, in science, LAC countries saw boys outperform girls, while in OECD countries, there was no gender gap.

Overall, the PISA 2022 results offer critical insights into the state of education in the LAC region, particularly in light of the challenges posed by the pandemic. The data underscores the importance of addressing educational inequities, improving student outcomes, and the need to focus on gender dynamics in academic performance. These findings will be invaluable in guiding policymakers and educators as they seek to enhance the quality and equity of education in Latin America and the Caribbean.

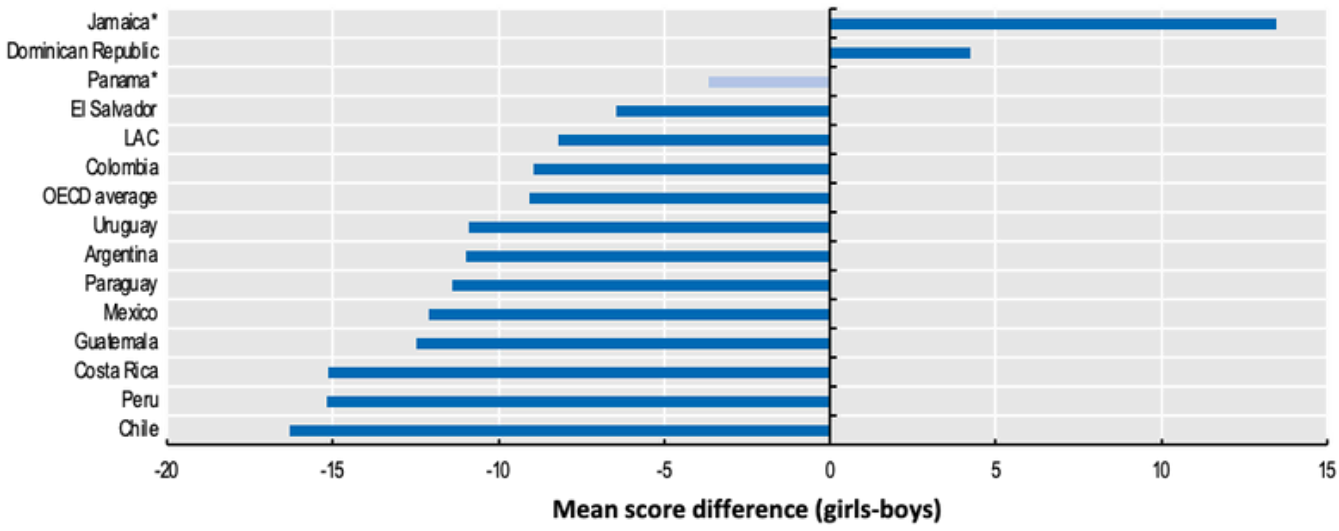
HOW DID LAC BOYS AND GIRLS PERFORM IN MATHEMATICS IN PISA 2022?

In PISA 2022, all participating LAC countries recorded mean scores in mathematics below the OECD average of 472 points. However, the gender gap in performance was slightly smaller among LAC countries on average, than in the OECD. Across the participating LAC countries, boys outperformed girls in mathematics by 8 score points, while boys outperformed girls by 9 in the OECD. Eight out of the fourteen LAC countries recorded a more significant gender gap than the OECD average (OECD, 2023).

In contrast, in Jamaica and the Dominican Republic, girls outperformed boys in mathematics by 13 and 4 score points, respectively. **Jamaica and the Dominican Republic are two of the 17 countries among all PISA participating countries where girls performed better than boys in mathematics** (OECD, 2023). On the other hand, in Chile, Peru, and Costa Rica, boys outperformed girls by 16 points, 15 points, and 15 points, respectively, making them part of the 5 countries with the widest gender gap in mathematics performance in favour of boys, along with Italy and Austria. Only in Panama, the difference in mathematics performance between girls and boys is not statistically significant (OECD, 2023).

Figure 1: Gender gap in mathematics performance, PISA 2022

Score-point difference in mathematics between boys and girls



Source : OECD, PISA 2022, Tables I.B1.4.17
Note : Statistically significant differences at 5% are displayed in a darker tone

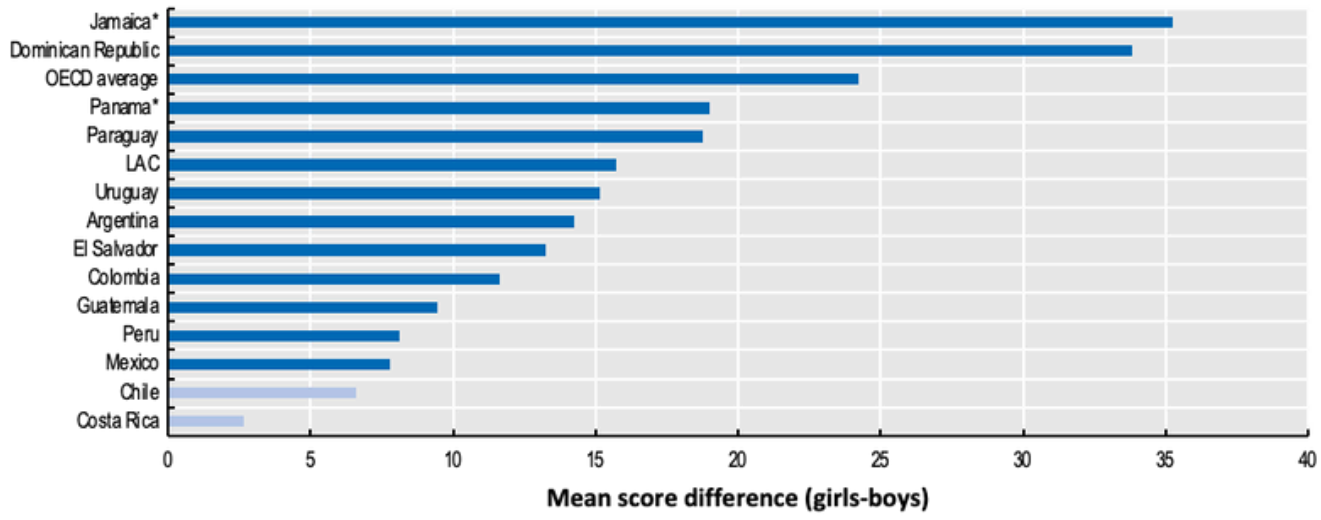
HOW DID LAC BOYS AND GIRLS PERFORM IN READING IN PISA 2022?

In reading, girls outperformed boys on average across the LAC region and OECD countries, with a wider gap than that in boys outperforming girls in mathematics. In fact, in nearly all countries participating in the PISA assessment, girls demonstrated higher reading scores. However, there were two exceptions within the LAC region: Costa Rica and Chile. In these countries, the difference in reading performance between boys and girls was not statistically significant, indicating a more balanced outcome between genders (OECD, 2023). The gender gap in favour of girls was more pronounced in OECD countries, where it averaged 24 points, compared to the LAC region, where the gap averaged 15 points. This difference suggests that **the advantage girls hold in reading in the LAC region is less pronounced compared to their peers in OECD countries**, where they enjoy a more substantial reading advantage.

In Jamaica and the Dominican Republic, girls outperformed boys by 35 and 34 points respectively, substantially higher than the 24-point average observed in OECD countries (OECD, 2023). **Interestingly, nine out of the ten countries with the narrowest gender gap in reading performance were LAC countries,** ranging from Costa Rica (3 score points, not statistically significant) to Uruguay (15 score points). The average gender gap across LAC countries (15 points) also falls into this range.

Fig 2: Gender gap in reading performance, PISA 2022

Score-point difference in reading between boys and girls



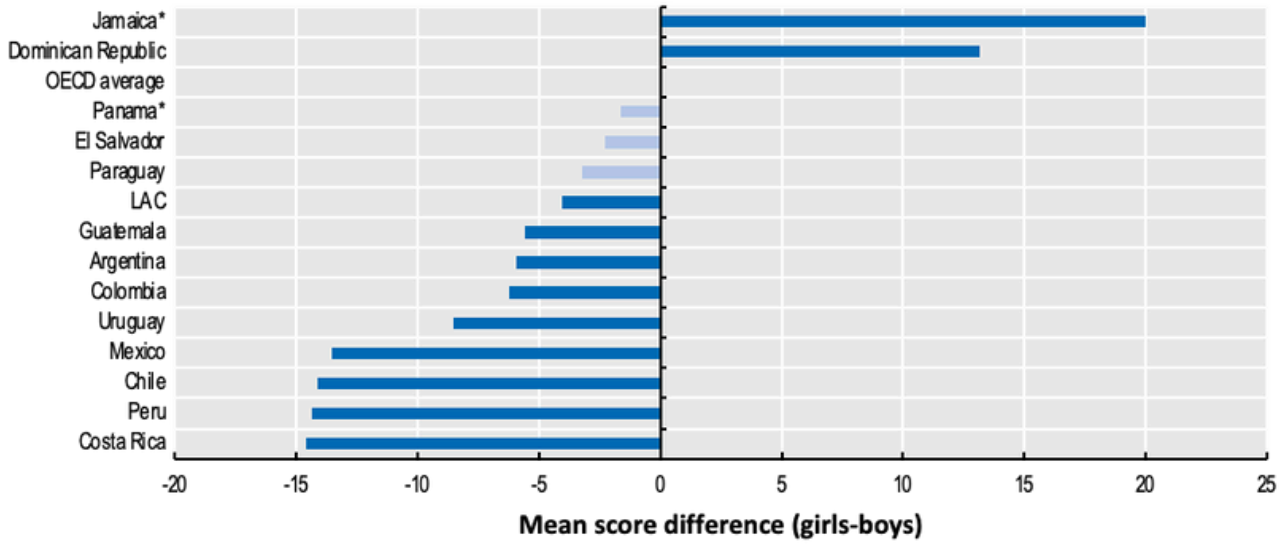
Source: OECD, PISA 2022 Database, Tables I.B1.4.18
Note: Statistically significant differences at 5% are displayed in a darker tone

HOW DID LAC BOYS AND GIRLS PERFORM IN SCIENCE IN PISA 2022?

Unlike in mathematics and reading, there was no significant difference in the science performance of boys and girls across OECD countries (OECD, 2023), indicating a more balanced outcome between genders in this subject. However, in the LAC region, boys, **on average, performed better than girls by 4 score points in science.** Despite this, the gender gap in science remained narrower than the gaps observed in reading and mathematics, where the differences were more pronounced. In several LAC countries, including Panama, El Salvador, and Paraguay, the performance difference between boys and girls in science was not statistically significant, suggesting that the gender gap in science is less consistent across the region. Interestingly, as in reading and mathematics, girls in Jamaica and the Dominican Republic outperformed boys in science by substantial margins—20 points in Jamaica and 13 points in the Dominican Republic. These large gaps highlight the strong performance of girls in these two countries.

Fig 3: Gender gap in science performance

Score-point difference in science between boys and girls



Source: OECD, PISA 2022 Database, Tables I.B1.4.18
Note: Statistically significant differences at 5% are displayed in a darker tone

In contrast, in Costa Rica (15 points), Peru (14 points), Chile (14 points), and Mexico (14 points), boys outperformed girls in science by the widest margins recorded among PISA-participating countries. This variation across countries highlights differing patterns of gender performance in science within the LAC region, with some countries showing larger gaps in favour of boys while others show notable success among girls.

HOW PROFICIENT ARE LAC BOYS AND GIRLS ACCORDING TO PISA 2022?

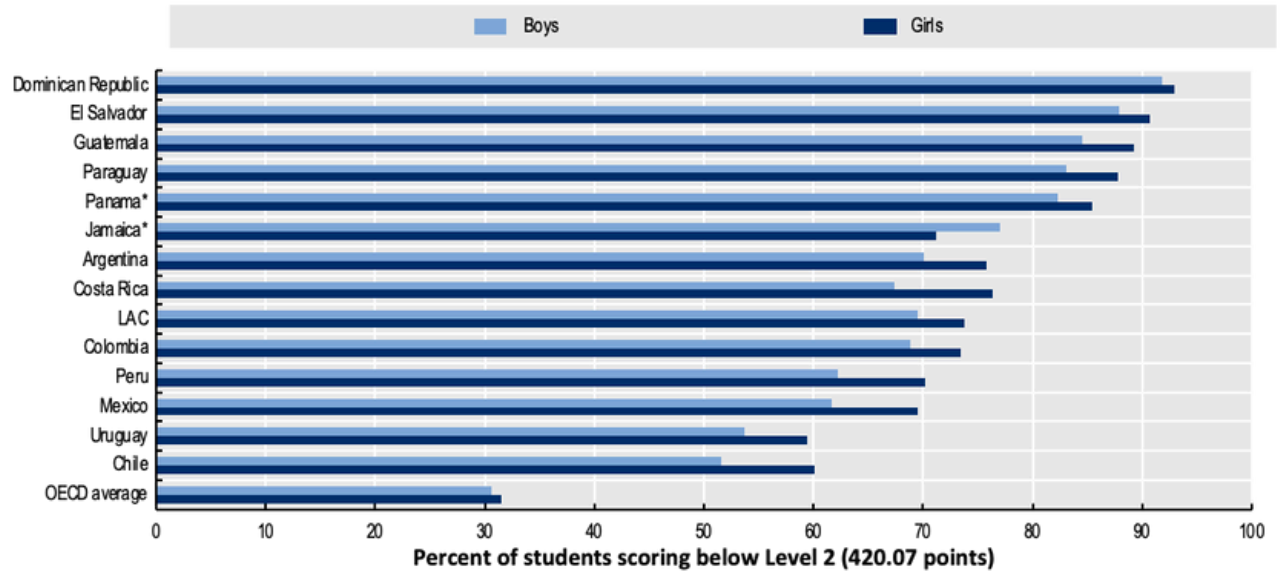
As much as the gender gaps in mean performance provide essential insights into their skill acquisition and development within each country, gender differences at different proficiency levels are equally significant. Figures 4 and 5 show the percentage of low performers among girls and boys in mathematics and reading in each country. Low performers are categorised as those who could not acquire Level 2 (420.07 points), considered the minimum proficiency standard according to PISA (OECD, 2023). For Latin America, this highlights that many students are not reaching basic proficiency, with over half of both boys and girls in the region failing to attain scores above the minimum proficiency Level 2.

HOW MANY LAC BOYS AND GIRLS WERE TOP AND LOW PERFORMERS IN MATHEMATICS IN PISA 2022?

Figure 4 brings to attention an important pattern among low achievers in mathematics. In almost all LAC countries, as well as OECD countries on average, **the share of low achievers (students scoring below Level 2) in mathematics was greater among girls** than boys with Jamaica[1] as the sole exception (OECD, 2023).

Fig 4: Low performer students in mathematics, by gender, PISA 2022

Percentage of students who score below proficiency Level 2 in mathematics, by gender, PISA 2022



Source: OECD, PISA 2022 Database, Table I.B1.4.31

1 Country did not meet one or more of the sampling criteria, therefore, results should be interpreted with caution.

Both the Dominican Republic and Jamaica stood out in the previous analyses, as girls outperformed boys on average in reading, mathematics, and science. However, the above figure shows that 93% of girls and 92% of boys in the Dominican Republic could not achieve a score that situated them at even the minimum proficiency level. Meanwhile, in Jamaica, the shares were lower but still high, with 78% of girls and 71% of boys among the low achievers.

At a regional level, the share of low achievers was significantly lower in the OECD compared to the LAC countries, and the share of girls among low achievers compared to the share of boys was much more significant in LAC than in the OECD. On average, in the OECD, 31% of girls and 30% of boys were classified as low achievers in mathematics, **whereas in the LAC region, 77% of girls and 72% of boys scored below Level 2 in mathematics**. In Costa Rica, Peru, Chile, and Mexico, the percentage of girls among low achievers exceeded that of boys by more than 6%. These patterns are concerning from a gender perspective globally, as the share of girls among low performers in mathematics has increased in most countries since PISA 2018 (OECD, 2023). **The growing number of girls failing to achieve minimum proficiency in mathematics could further deter their participation in STEM subjects,** exacerbating the already low representation of women in these fields and impacting their ability to develop and maintain numeracy skills as adults. The under-representation of girls and women in STEM fields has long been a significant concern as it limits their employment and income prospects (Encinas-Martín & Cherian, 2023).

IN COSTA RICA, PERU, CHILE, AND MEXICO, THE SHARE OF GIRLS SCORING BELOW LEVEL 2 IN MATHEMATICS WAS MORE THAN 6% HIGHER THAN BOYS.

Similar to low performers who fail to acquire a Level 2 in a subject, those who acquire a Level 5 (above 606.99 points for PISA 2022) or higher in a subject are considered top performers. As in PISA 2018, boys outperformed girls among high achievers in mathematics across all countries. **In LAC countries, only 0.4% of boys and 0.1% of girls reached the highest proficiency level in mathematics**, while in OECD countries, 11% of boys and 7% of girls attained this level (OECD, 2023).

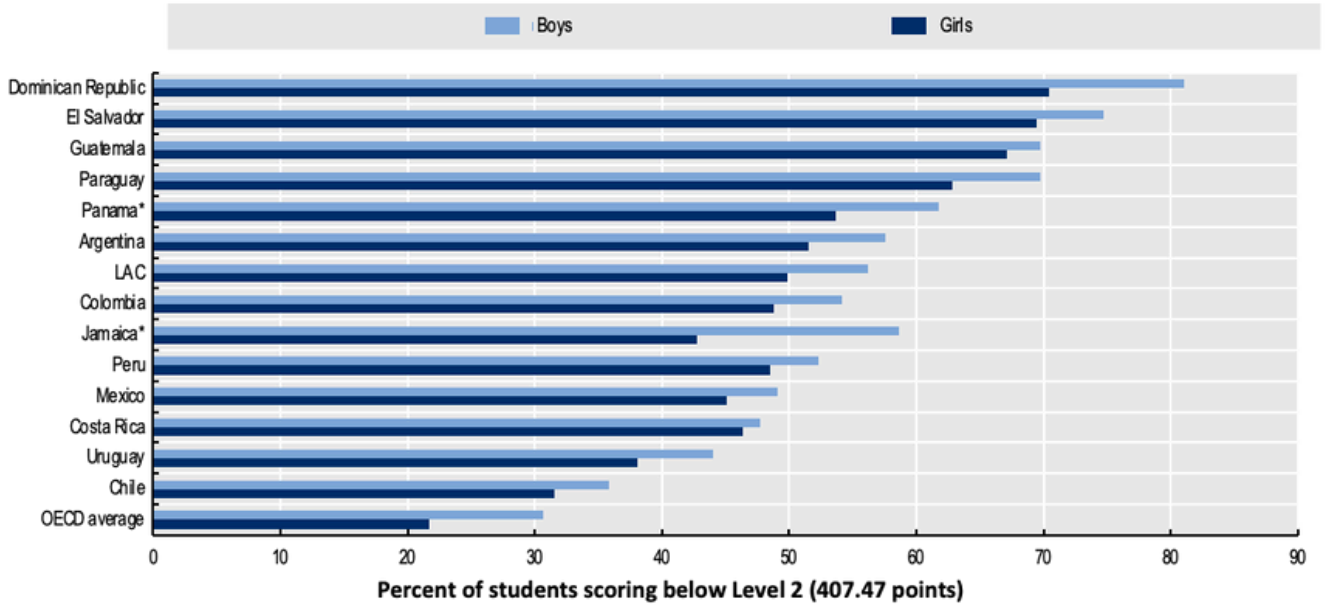
HOW MANY LAC BOYS AND GIRLS WERE TOP AND LOW PERFORMERS IN READING IN PISA 2022?

Unlike in mathematics, **boys were over-represented among low achievers in reading across all countries and regions**. In the OECD and LAC regions, the proportion of boys among low achievers was notably higher, with girls outperforming boys at the lower end of the achievement scale. Specifically, the gender gap in low achievers was 9% in the OECD, favouring girls, and 6.4% in the LAC region. However, this disparity was even more pronounced in the Dominican Republic and Jamaica. In Jamaica, boys accounted for 16% more low achievers than girls, while in the Dominican Republic, the gap was 11%. This suggests that boys in these countries face significant challenges in reading performance compared to their female peers. Overall, **the proportion of low achievers was significantly lower in the OECD, with 31% of boys and 22% of girls, compared to 56% of boys and 50% of girls in the LAC region** (OECD, 2023).

Among high achievers in reading, the pattern is the opposite. Girls are equally represented or over-represented among top performers, with no country reporting a higher share of boys among top achievers. However, the proportion of top performers is significantly higher in the OECD, where 6% of boys and 8% of girls were classified as high achievers, compared to only 0.8% of boys and 1% of girls in the LAC region. These findings underscore the contrasting patterns of reading performance across the two areas, with girls consistently outperforming boys, especially among high achievers.

Fig 5: Low performers in reading, by gender, PISA 2022

Percentage of students who score below proficiency Level 2 in reading, by gender

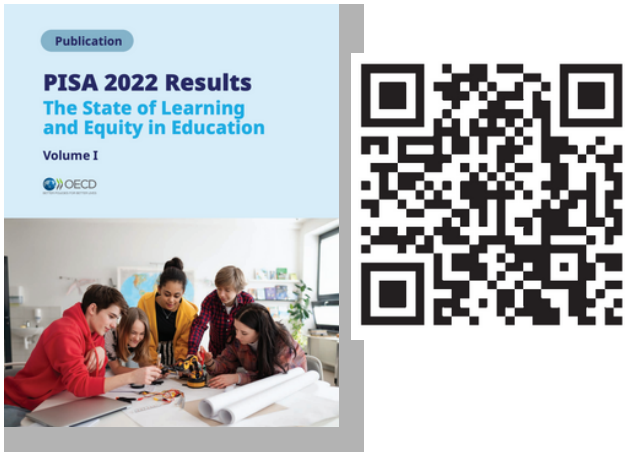


Source: OECD, PISA 2022 Database, Table I.B1.4.32.

WHAT ARE SOME OF THE KEY TAKEAWAYS FOR THE LAC REGION FROM PISA 2022?

Both the proportion of students achieving minimum proficiency in core subjects and the provision of equal opportunities by gender are key indicators of how equitable an education system is. An inclusive education system ensures that all students meet baseline standards in core subjects, while a fair system guarantees equal opportunities regardless of gender. Equity in education requires both inclusion and fairness (OECD, 2023).

In light of PISA 2022, it is clear that education systems in the LAC region fall short of being equitable. The high percentage of low performers in core subjects, coupled with gender disparities among these low performers, calls for urgent attention. While gender gaps in average performance are narrower in LAC compared to the OECD, the persistent gaps among low achievers, particularly in mathematics for girls and reading for boys, highlight the need for targeted support. Effective policy changes must ensure that both boys and girls receive quality education that enables them to achieve at least minimum proficiency in all fields of study.



References

OECD. (2023) *PISA 2022 Results (Volume I): The State of Learning and Equity in Education, PISA, OECD Publishing, Paris, https://doi.org/10.1787/53f23881-en.*

Encinas-Martín, M. & Cherian, M. (2023) *Gender, Education and Skills: The Persistence of Gender Gaps in Education and Skills, OECD Skills Studies, OECD Publishing, Paris, https://doi.org/10.1787/34680dd5-en.*

Contact information:

Marta Encinas-Martín, Education Gender Ambassador, Education and Skills Directorate, OECD

Email:

Marta.Encinas-Martin@oecd.org

OECD

BETTER POLICIES FOR BETTER LIVES