



Executive summary

Today's workplaces demand people who can solve problems in concert with others. But collaboration poses potential challenges to team members. Labour might not be divided equitably or efficiently, with team members perhaps working on tasks they are unsuited for or dislike. Conflict may arise among team members, hindering the development of creative solutions. Thus, collaboration is a skill in itself.

There have been few attempts to assess how well students collaborate with one another. With its first ever assessment of collaborative problem solving, PISA 2015 addresses the lack of internationally comparable data in this field, allowing countries and economies to see where their students stand in relation to students in other education systems. Some 52 countries and economies participated in the collaborative problem-solving assessment (32 OECD countries and 20 partner countries and economies).

WHAT THE DATA TELL US

Student performance in collaborative problem solving

- Students in Singapore score higher in collaborative problem solving than students in all other participating countries and economies, followed by students in Japan.
- On average across OECD countries, 28% of students are able to solve only straightforward collaborative problems, if any at all. By contrast, fewer than one in six students in Estonia, Hong Kong (China), Japan, Korea, Macao (China) and Singapore is a low achiever in collaborative problem solving.
- Across OECD countries, 8% of students are top performers in collaborative problem solving, meaning that they can maintain an awareness of group dynamics, ensure team members act in accordance with their agreed-upon roles, and resolve disagreements and conflicts while identifying efficient pathways and monitoring progress towards a solution.
- Collaborative problem-solving performance is positively related to performance in the core PISA subjects (science, reading and mathematics), but the relationship is weaker than that observed among those other domains.
- Students in Australia, Japan, Korea, New Zealand and the United States perform much better in collaborative problem solving than would be expected based on their scores in science, reading and mathematics.

Student demographics and collaborative problem solving

- Girls perform significantly better than boys in collaborative problem solving in every country and economy that participated in the assessment. On average across OECD countries, girls score 29 points higher than boys. The largest gaps – of over 40 points – are observed in Australia, Finland, Latvia, New Zealand and Sweden; the smallest gaps – of less than 10 points – are observed in Colombia, Costa Rica and Peru. This contrasts with the PISA 2012 assessment of individual problem solving, where boys generally performed better than girls.
- Performance in collaborative problem solving is positively related to students' and schools' socio-economic profile, although this relationship is weaker than the relationship between socio-economic profile and performance in the three core PISA subjects.



There are no significant performance differences between advantaged and disadvantaged students, or between immigrant and non-immigrant students, after accounting for performance in science, reading and mathematics. But girls still score 25 points higher than boys after accounting for performance in the three core PISA subjects.

Students' attitudes towards collaboration

- Students in every country and economy have generally positive attitudes towards collaboration. Over 85% of students, on average across OECD countries, agree with the statements “I am a good listener”, “I enjoy seeing my classmates be successful”, “I take into account what others are interested in”, “I enjoy considering different perspectives”, and “I enjoy co-operating with peers”.
- Girls in almost every country and economy tend to value relationships more than boys, meaning that girls agree more often than boys that they are good listeners, enjoy seeing their classmates be successful, take into account what others are interested in and enjoy considering different perspectives.
- Boys in the majority of countries and economies tend to value teamwork more than girls, meaning that boys agree more often than girls that they prefer working as part of a team to working alone, find that teams make better decisions than individuals, find that teamwork raises their own efficiency and enjoy co-operating with peers.
- Advantaged students in almost every country and economy tend to value relationships more than disadvantaged students, while disadvantaged students in most countries and economies tend to value teamwork more than advantaged students.
- After accounting for performance in the three core PISA subjects, gender, and socio-economic status, the more students value relationships, the better they perform in collaborative problem solving. A similar relationship is observed the more that students value teamwork.

Student activities, school policies and collaboration

- Attitudes towards collaboration are generally more positive as students engage in more physical activity or attend more physical education classes per week.
- Students who play video games outside of school score slightly lower in collaborative problem solving than students who do not play video games, on average across OECD countries, after accounting for performance in the three core PISA subjects, gender, and students' and schools' socio-economic profile. But students who access the Internet, chat or social networks outside of school score slightly higher than other students.
- Students who work in the household or take care of other family members value both teamwork and relationships more than other students, as do students who meet friends or talk to friends on the phone outside of school.

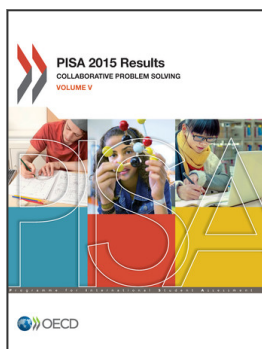
Collaborative schools

- On average across OECD countries, students who reported not being threatened by other students score 18 points higher in collaborative problem solving than students who reported being threatened at least a few times per year. Students also score 11 points higher for every 10 percentage-point increase in the number of schoolmates who reported that they are not threatened by other students.
- Students score higher in collaborative problem solving when they or their schoolmates reported that teachers treat students fairly, even after accounting for their performance in science, reading and mathematics.

What PISA results imply for policy

Education systems could help students develop their collaboration skills. Physical education, for example, provides many natural opportunities to embed collaborative activities and to develop social skills and attitudes towards collaboration. Results also show that exposure to diversity in the classroom is associated with better collaboration skills.

This report also shows that fostering positive relationships at school can benefit students' collaborative problem-solving skills and their attitudes towards collaboration, especially when these relationships involve students directly. Schools can organise social activities to foster constructive relationships and school attachment, provide teacher training on classroom management, and adopt a whole-school approach to prevent and address school bullying. Parents can also make a difference, as collaboration begins at home.



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