Teaching in Focus #18

How do teachers teach? Insights from teachers and students



Teaching & Learning

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How do teachers teach? Insights from teachers and students

- Almost all mathematics teachers across participating countries use clear and structured teaching practices, according to both teachers and students. A vast majority of teachers also use student-oriented practices and enhanced learning activities in their classroom.
- Cross-country differences are weak regarding the use of structuring practices, but moderate regarding the use of student-oriented practices and enhanced learning activities.
- Overall, mathematics teachers tend to report, more often than students, that they use a given teaching practice.
- The gap between teacher and student reports about the use of a given teaching practice varies across countries. Overall, the highest degree of convergence is observed for structuring practices, and the smallest is observed for student-oriented practices.

What is the TALIS-PISA link?

TALIS (Teaching and Learning International Survey) is the first international survey examining teaching and learning environments in schools. In the 2013 cycle of TALIS, an option was provided to survey teachers in schools that also participated in PISA 2012. Eight countries chose this option: Australia, Finland, Latvia, Mexico, Portugal, Romania, Singapore and Spain.

Key features of the TALIS-PISA link:

- Representative samples of schools and teachers within schools with a target sample size of 150 schools per country, 1 school principal and 20 teachers in each school, including all eligible mathematics teachers.
- TALIS questionnaires for teachers and school principals, with special additional questionnaires for mathematics teachers (i.e. the mathematics module), were available on paper and on line.
- PISA questionnaires, including, in particular, student and school questionnaires, as well as student assessments in mathematics, reading and science.

Educational quality is defined and shaped by the classroom practices implemented by teachers in our schools. The TALIS-PISA link presents a unique opportunity to explore what takes place in the classroom by listening to the voices of teachers and students. Teachers, with their professional training and knowledge, are experts on various instructional approaches, methods and lesson features. Since students are exposed to a variety of teachers in different subjects over an extended period of time, they can also be considered experts on different modes of teaching. Both opinions provide a rich and complex picture of what happens in the classroom.

Classroom practices under study

Mathematics teachers who participated in the last cycle of TALIS, and students who participated in PISA 2012, were asked to rate how often they/their teacher use a list of classroom practices. Eight classroom practices were common to the lists submitted to teachers and students and can be directly compared. These practices can be grouped into three teaching strategies: 1) structuring practices, which pertain to clarity of teaching and classroom management in learning activities; 2) student-oriented practices, which place students at the centre of the action; and 3) enhanced learning activities (see Box 1).

Box 1. Three teaching strategies

Structuring practices

- The teacher explicitly states learning goals.
- The teacher lets students practice similar tasks until s/he knows that every student has understood the subject matter.
- The teacher presents a summary of recently-learned content.

Student-oriented practices

- Students work in small groups to come up with a joint solution to a problem or task.
- The teacher gives different work to the students who have difficulties learning and/or to those who can advance faster.

Enhanced learning activities

- Students work on projects that require at least one week to complete.
- The teacher expects students to explain their thinking on complex problems.
- The teacher encourages students to solve problems in more than one way.

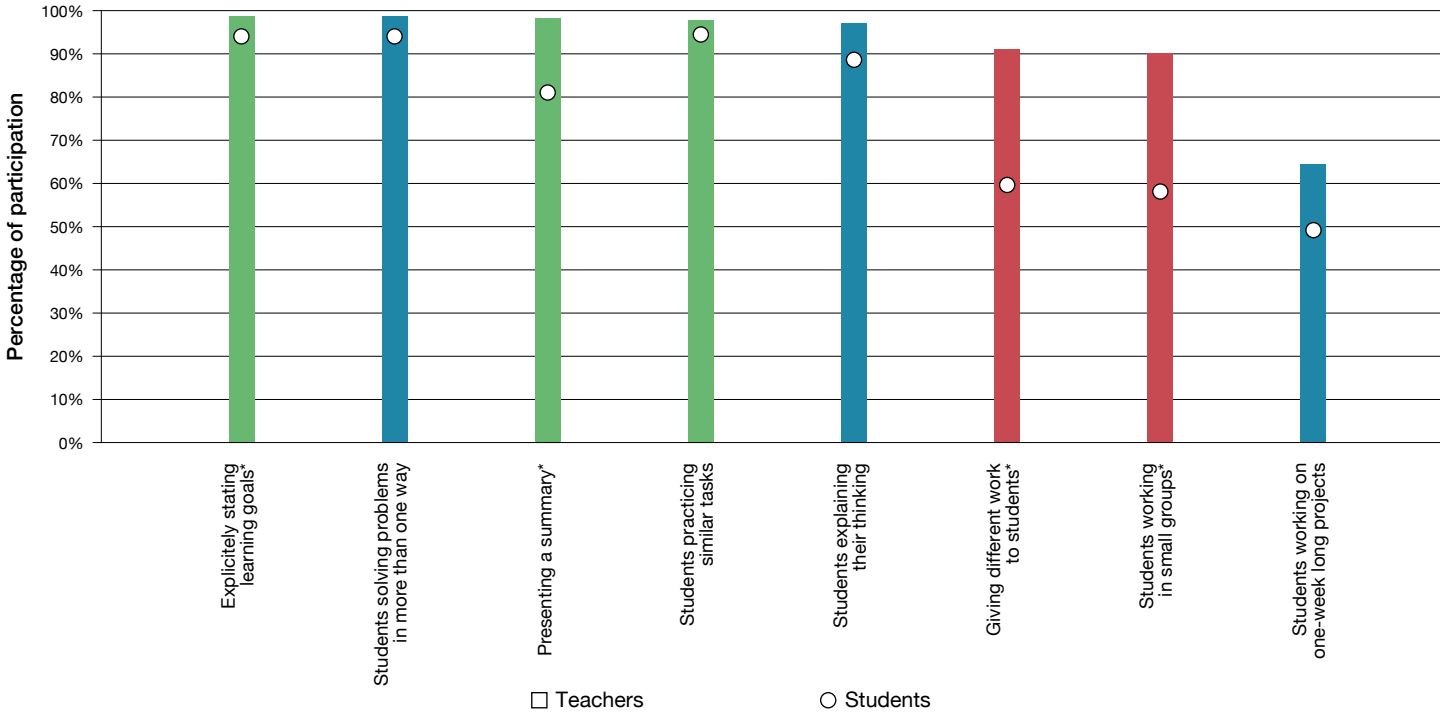
How prevalent are the three teaching strategies across countries?

The use of structuring practices was the most often reported by both teachers and students. On average across the eight participating countries, at least 97% of teachers reported using each of the three structuring practices: explicitly citing learning goals, letting students practice until they understand the subject matter, and presenting a summary of recently-learned content (see Figure 1).

Most teachers also reported using enhanced learning activities, in particular encouraging students to solve problems in more than one way (99%), expecting students to explain their thinking on complex problems (97%), and having students work on a week-long project (64%).

Student-oriented practices, i.e. giving different work to students depending on their understanding, or having them work in small groups to come up with joint solutions, were used less often than the other two strategies, especially when looking at students' reports. However, around 90% of teachers and 60% of students still stated that these practices were used.

Figure 1. Prevalence of teaching practices, according to teachers and students



Notes:
Practices are ranked in descending order of the percentage of teachers reporting the use of a given teaching practice.
The bars represent the percentage of teachers reporting the use of a given practice. The circles represent the percentage of students reporting the use of a given practice by their teacher. The structuring practices are in green, the student-oriented practices are in red and the enhanced learning activities are in blue.
* Indicates a significant difference at the 5% threshold between the percentages of teachers and students reporting the use of a given practice.
Source: OECD (2012), ***Programme for International Survey Assessment (PISA): 2012 complete database,*** www.oecd.org/pisa/pisaproducts/pisa2012database-downloadabledata.htm; OECD (2013), ***Teaching and Learning International Survey (TALIS): 2013 complete database,*** http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20.

Do teachers teach differently from one country to another?

The answer is “yes”, at least in part. However, some teaching practices seem to be universal, and therefore do not show much variation across countries. Almost all mathematics teachers use structuring practices in their classroom, regardless of where they teach. Depending on the country, 98-100% of teachers report that they explicitly state their teaching learning goals (Figure 2.A). However, teachers do not use student-oriented practices to the same extent across countries. For example, some cross-country differences are observed regarding students working in small groups: 78% of teachers in Finland report undertaking this practice, compared to almost 100% of teachers in Mexico (Figure 2.B). Among enhanced learning activities, having students work on week-long projects is subject to large cross-country variations, with 20% of Finnish teachers reporting using this practice versus 86% of Mexican teachers (Figure 2.C).

There were similar cross-country findings regarding student responses about their mathematics teachers, with students reporting that almost all teachers use structuring practices. Their accounts of whether they work in small groups or on week-long projects also follow the same pattern of cross-country variations as teachers' responses. For example, between 21% (Finland) and 60% (Mexico) of students report that they work on projects that require at least one week to complete.

Comparing teachers' and students' reports on what happens in the classroom

In all participating countries, mathematics teachers tend to report more often than students that they use a given practice in their classroom[1]. However, the gap between what teachers and students report is relatively small. This is consistently true across countries, although it varies depending on the teaching strategy. Teachers and students seem to agree more about the use of structuring practices and some enhanced learning activities. For example, on average across all countries, the difference between the percentage of teachers and students reporting that the teacher explicitly states learning goals in teaching amounts to five percentage points (Figure 2.A), and for having students work on week-long projects amounts to ten percentage points (Figure 2.C).

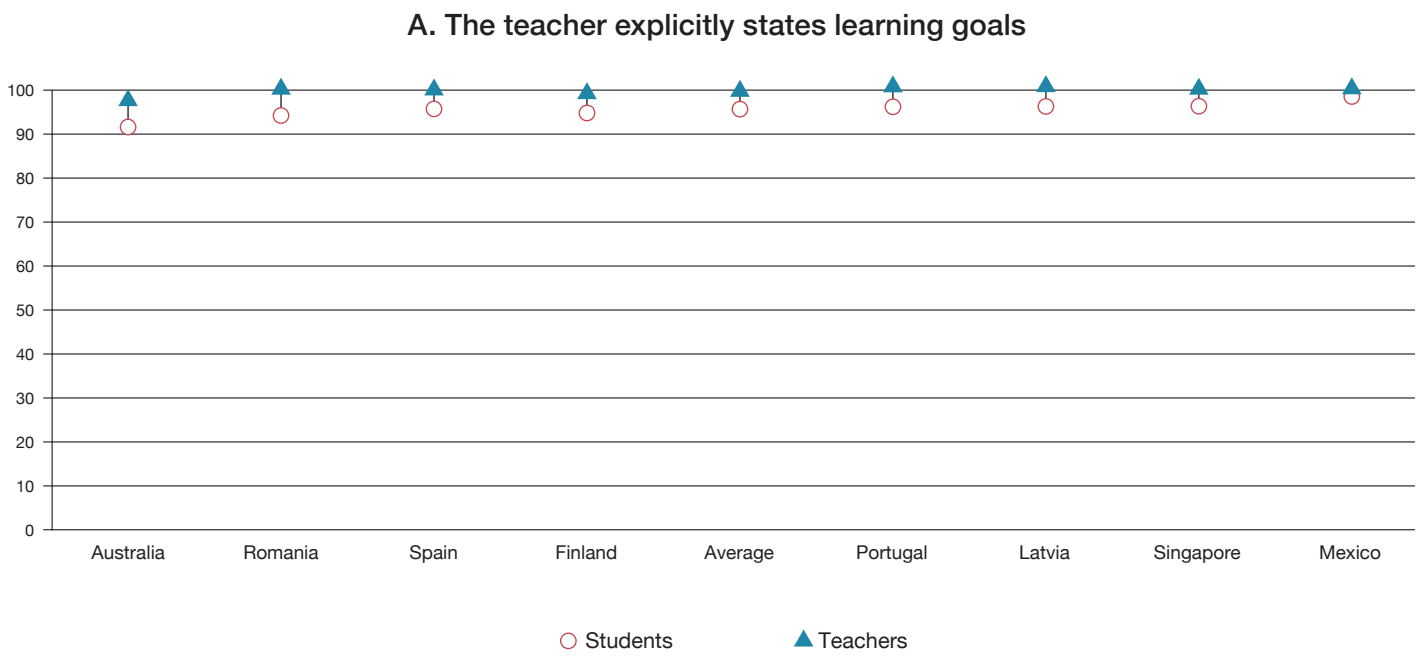
The gap between teachers' and students' views is larger when pertaining to the use of student-oriented practices. Across all countries, on average, the difference between the share of teachers and students reporting that students work in small groups is 31 percentage points, which is large compared to other practices. For this practice, the greatest gap is observed in Finland, where the number of teachers who report having students work in small groups is more than twice the number of students who report the use of this practice.

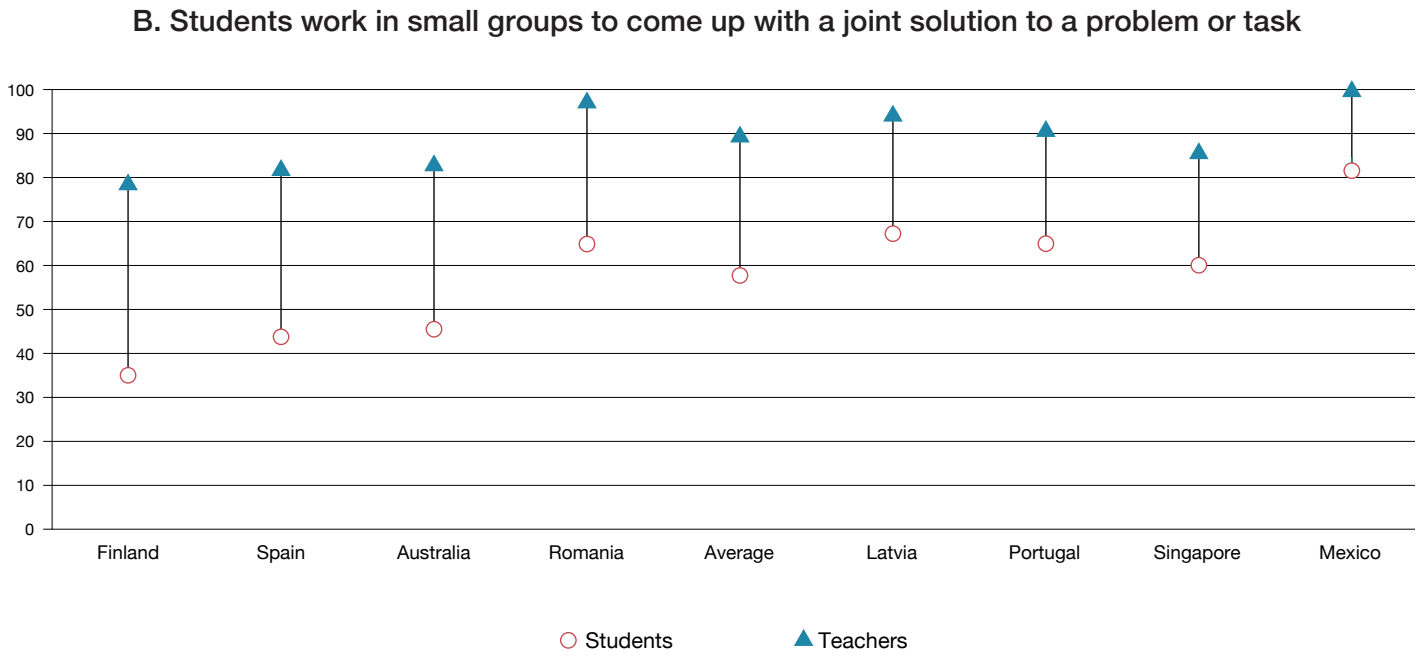
There are no obvious reasons for this gap being more pronounced. It could be that teachers recognise this teaching strategy as a good teaching practice, and thus they tend to over-report its use. It could also be that students fail to recognise these practices as they are less conventional and more innovative. For example, teachers define the objective of dividing students into groups as finding a joint solution to a problem; however, given the complexities of classroom interactions (dealing with disruptive behaviour, lack of instruction time, low levels of engagement, etc.), students may have difficulties in identifying the purpose of the activity. Either way, this calls for further support of teachers' and students' engagement in student-centred activities.

1. In their meta-analysis, Goe et al. (2008) note that, in several studies, students' reports on classroom practices showed a stronger association with student outcomes than teachers' responses. However, the authors stressed that, in order to have a comprehensive understanding of the events taking place in the classroom, it is crucial to have the perspective of both teachers and students.

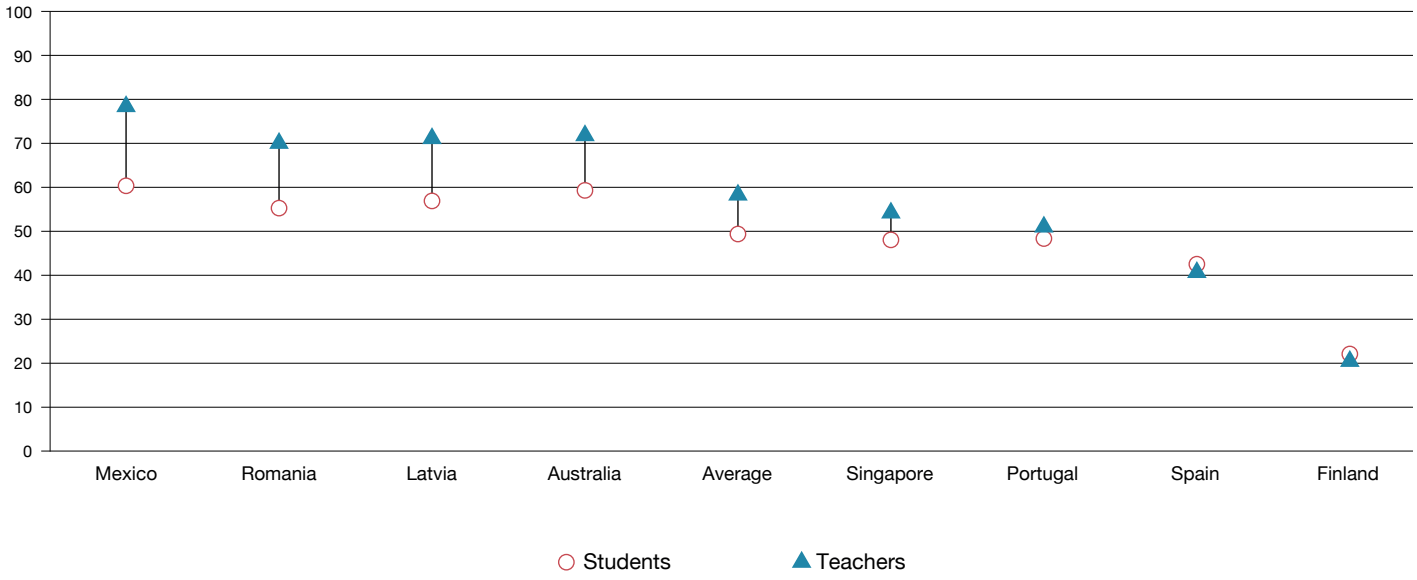
A related question is how teacher/student reports on student-orientated practices are linked with achievement. Results from PISA 2015 showed that practices such as perceived feedback and enquiry-based instruction show weak associations with student achievement (OECD, 2016). A possible explanation is that teachers are not able to implement these strategies properly. The upcoming TALIS Video Study (www.oecd.org/edu/school/talisvideostudy.htm) may share more evidence about the relationship between teacher/student interactions, classroom practices and student outcomes.

Figure 2. Teachers' and students' reports about teaching practices across countries





C. Students work on projects that require at least one week to complete



Note: Countries are ranked in descending order of the difference between the percentages of teachers and students reporting the use of a given practice.
Source: OECD (2012), *Programme for International Survey Assessment (PISA): 2012 complete database,* www.oecd.org/pisa/pisaproducts/pisa2012database-downloadabledata.htm; OECD (2013), *Teaching and Learning International Survey (TALIS): 2013 complete database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20.

The bottom line

Structuring practices are the most commonly used teaching practice in mathematics classrooms, according to both teachers and students. Since they aim to deliver an orderly and clear lesson, they could be seen as the necessary foundation for the development of any other practice. This would explain why they are so predominant in the teaching strategies implemented by teachers. However, classroom instruction time is a scarce resource, and an overemphasis on structuring practices could limit teachers in their use of other potentially more innovative strategies, such as enhanced learning activities and student-oriented strategies[2].

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www.oecd.org/talis

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To learn more

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