

## Chapter 8.

### Innovation in homework practices

*This chapter presents the change in homework practices in mathematics and science. They include the frequency of homework, the form of its assessment as well as the monitoring and discussion of homework by the teacher. The change within countries is presented as an increase or decrease in the share of students exposed to the practice. The percentage point change is also expressed as a standardised effect size in the final table.*

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The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

## 47. Frequency of homework

### Why it matters

Sometimes dreaded by students, and even by parents, homework contributes to better learning achievement in higher grades, though less in primary education. It may have a negative impact on the learning of low achievers. This practice should vary depending on the time already spent in school, and be balanced against the wellbeing of children. In (mainly Asian) countries where students commonly go to a cram school after formal schooling, school teachers may adapt to society by giving less homework to students.

### Mathematics

#### Change at the OECD level: small

At the OECD level, the proportion of 8th grade students having mathematics homework twice a week or more decreased by 1 percentage point between 2007 and 2015. The mean absolute change amounted to 7 percentage points, corresponding to a small effect size of 0.17. Homework frequency in 8th grade mathematics varied markedly across OECD systems: while on average 55% students get maths homework at least twice a week, the span goes from 94% in Lithuania to 8% in Sweden.

#### Countries where there has been the most change

Moderate changes were observed in both directions. The share of 8th grade students given mathematics homework twice a week or more increased by 13 percentage points in Quebec (Canada) and Slovenia while it declined by 15 percentage points in Ontario (Canada).

### Science

#### Change at the OECD level: small

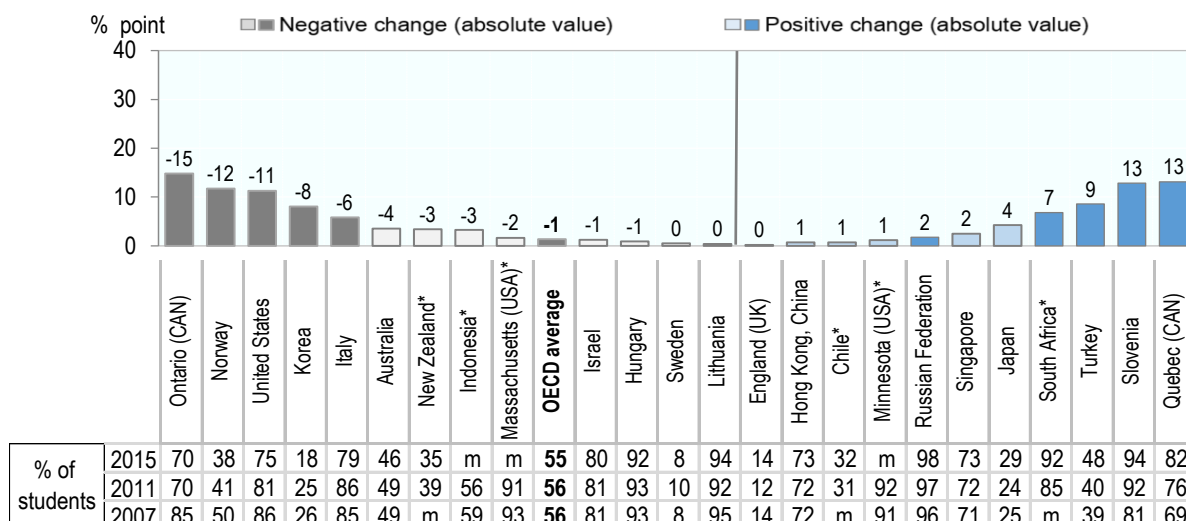
While positive and negative changes have nullified each other, the mean absolute change in this practice at the OECD level was 7 percentage points. This change translates into a small effect size of 0.18. In 2015, on average 23% of students got science homework at least twice a week, with a span ranging from 45% in Turkey to 5% in Korea (where students may go to a cram school after class).

#### Countries where there has been the most change

Few countries registered significant changes in the frequency of science homework. On the one hand, Quebec (Canada) and Turkey witnessed considerable increases in the share of 8th grade students given science homework very frequently between 2007 and 2015 (+17 and 13 percentage points respectively). On the other hand, Minnesota (United States) and the United States experienced a decline of about 10 percentage points between 2007 and 2011. Positive and negative changes recorded were generally below 10 percentage points.

**Figure 8.1. Frequency of homework in 8th grade maths**

Change in and share of students whose teachers give them homework at least twice a week, 2007-2015, teachers report



Note: Darker tones correspond to statistically significant values.

\* refers to calculations based on other years, based on data availability.

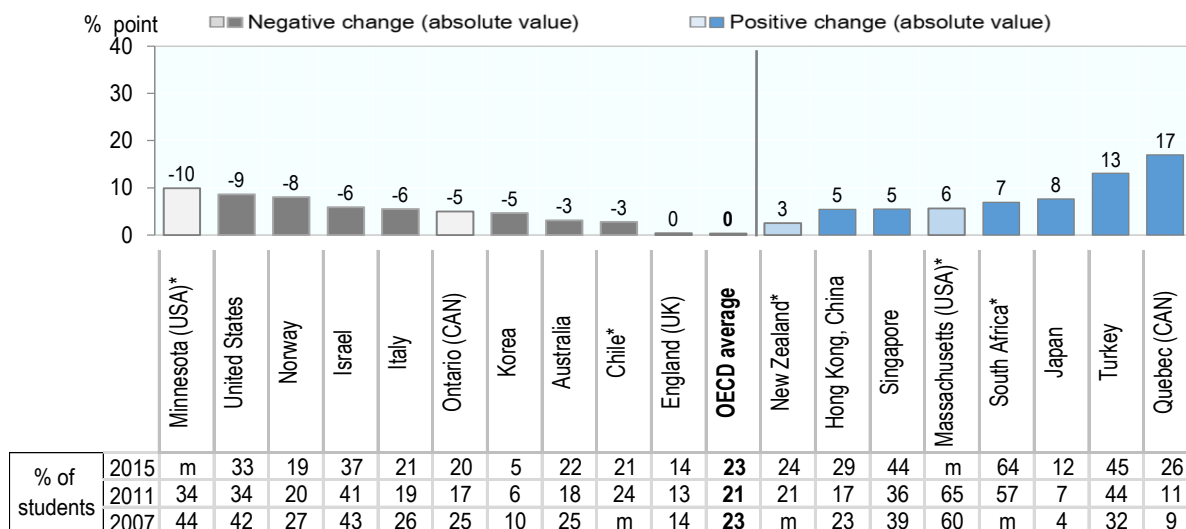
The OECD average is based on OECD countries with available data in 2007, 2011 and 2015.

Source: Authors' calculations based on TIMSS Databases.

StatLink <https://doi.org/10.1787/888933904866>

**Figure 8.2. Frequency of homework in 8th grade science**

Change in and share of students whose teachers give them homework at least twice a week, 2007-2015, teachers report



Note: Darker tones correspond to statistically significant values.

\* refers to calculations based on other years, based on data availability.

The OECD average is based on OECD countries with available data in 2007, 2011 and 2015.

Source: Authors' calculations based on TIMSS Databases.

StatLink <https://doi.org/10.1787/888933904885>

## 48. Monitoring homework completion

### Why it matters

Why do teachers give homework if they do not monitor their completion? This may reduce students' incentives to actually complete them. On the other hand, as students and parents know, it gives students some slack if, for some reason, they could not make it. However, one would expect teachers who give homework to monitor whether they students do them as homework should also be part of their teaching and learning strategy. One should just expect the good practice of systematically monitoring completion to spread within systems.

### Mathematics

#### Change at the OECD level: moderate

OECD systems experienced both expansions and contractions of this practice, albeit the average net change was slightly negative (about 1 percentage point). The overall absolute change, regardless of change direction, was 10 percentage points, corresponding to a modest effect size of 0.23. On average, about 3 in 4 students had a teacher who monitors systematically the completion of their maths homework in OECD systems in 2015, with a span ranging from 95% of students in Slovenia to 55% in Quebec (Canada).

#### Countries where there has been the most change

The spread of this practice by 23 percentage points was an innovation for Turkish students between 2007 and 2015, and this was also the case in Norway (14 percentage points) and Slovenia (12). By contrast, the share of students exposed to this good practice declined by over 15 percentage points in Sweden and Ontario (Canada).

### Science

#### Change at the OECD level: small

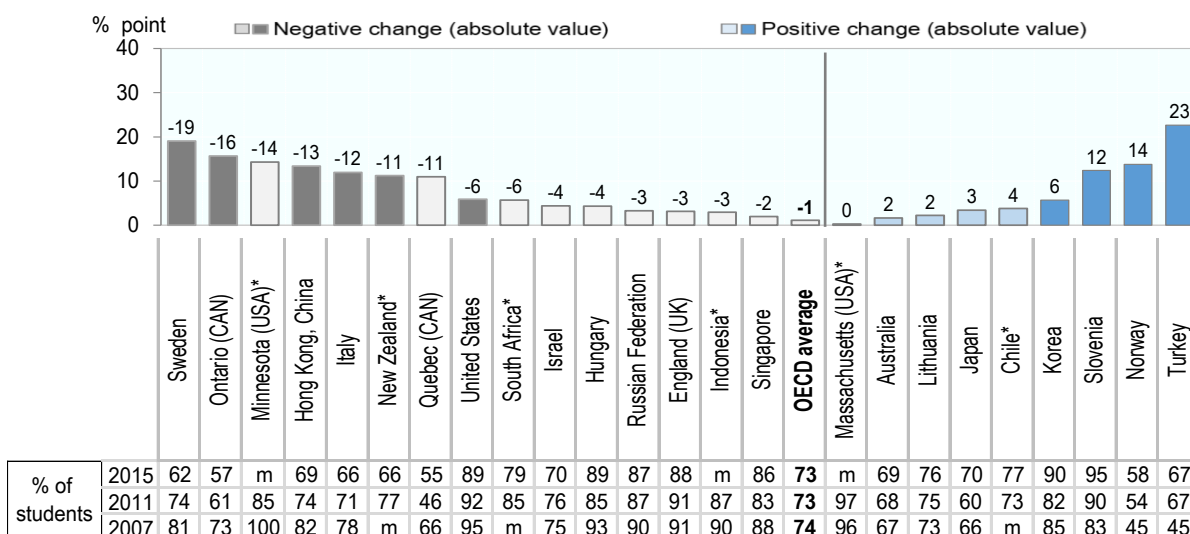
The share of students whose science teachers constantly monitor the completion of their homework decreased by 3 percentage points on average in OECD systems. Combining positive and negative variations, the absolute change was 8 percentage points, corresponding to a small effect size of 0.18. In 2015, 70% of 8th grade students got the completion of their homework constantly monitored by their teacher on average, although it was still only the case for half of the students in Norway.

#### Countries where there has been the most change

Innovation has been modest in this area and only a small number of countries registered substantial changes. Particularly, between 2007 and 2015, the share of 8th grade students with science teachers who constantly monitor homework completion increased by 16 percentage points in Turkey. This share reduced by 16 and 14 percentage points in Italy and Ontario (Canada), respectively. All other positive and negative changes were below 10 percentage points.

**Figure 8.3. 8th grade students being monitored for homework completion in maths**

Change in and share of students whose teachers monitor homework completion always or almost always, 2007-2015, teachers report



Note: Darker tones correspond to statistically significant values.

\* refers to calculations based on other years, based on data availability.

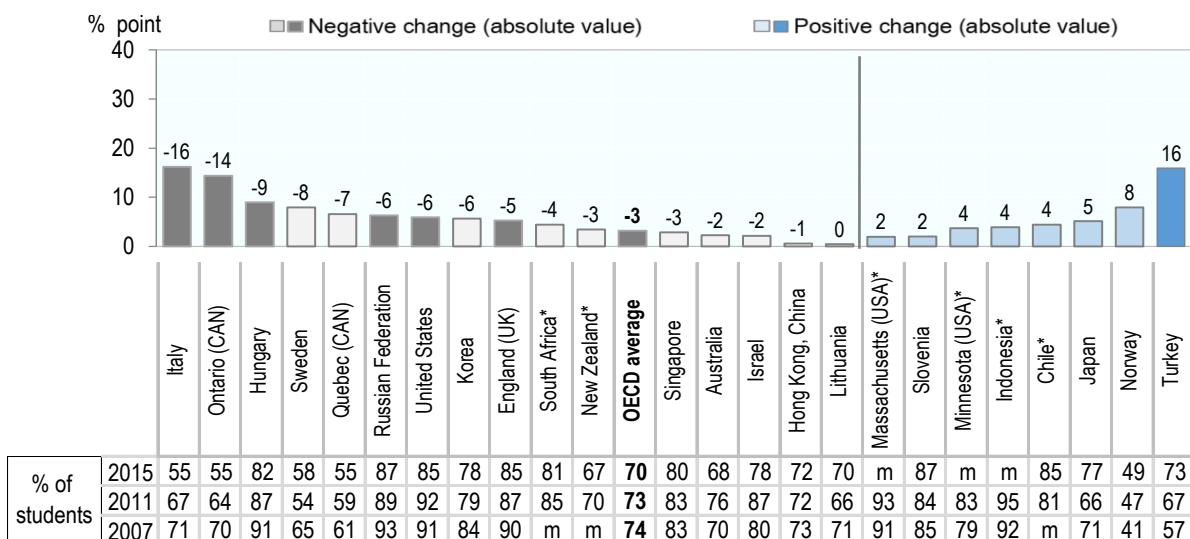
The OECD average is based on OECD countries with available data in 2007, 2011 and 2015.

Source: Authors' calculations based on TIMSS Databases.

StatLink <https://doi.org/10.1787/888933904904>

**Figure 8.4. 8th grade students being monitored for homework completion in science**

Change in and share of students whose teachers monitor homework completion always or almost always, 2007-2015, teachers report



Note: Darker tones correspond to statistically significant values.

\* refers to calculations based on other years, based on data availability.

The OECD average is based on OECD countries with available data in 2007, 2011 and 2015.

Source: Authors' calculations based on TIMSS Databases.

StatLink <https://doi.org/10.1787/888933904923>

## 49. Students correcting their own homework

### Why it matters

While homework should always be corrected, there is no need for teachers to always correct it themselves. Depending on time available and on the nature of the homework, teachers can either correct the homework in a whole-class setting or just provide some form of correction and let students correct their own homework. Teachers should however assess formatively the school- (and sometimes) home- work of their students to help them progress.

### Mathematics

#### Change at the OECD level: moderate

The share of students systematically correcting their maths homework themselves increased by about 5 percentage points on average in OECD systems. Increases and reductions combined, the average absolute change was 12 percentage points, corresponding to a moderate effect size of 0.25. While on average 44% students were asked to do so in 2015, large differences can be highlighted with for example 69% of students concerned in Japan but only 16% in Lithuania.

#### Countries where there has been the most change

Between 2007 and 2015, teachers in Japan innovated by strongly increasing the use of this practice: the proportion of students regularly exposed to it rose by 22 percentage points. This was the same in Sweden and England, where the practice increased by 20 percentage points. In contrast, this practice lost considerable ground in Indonesia, with a decline by 17 percentage points between 2007 and 2011, as well as in Italy where it contracted by 16 percentage points between 2007 and 2015.

### Science

#### Change at the OECD level: moderate-low

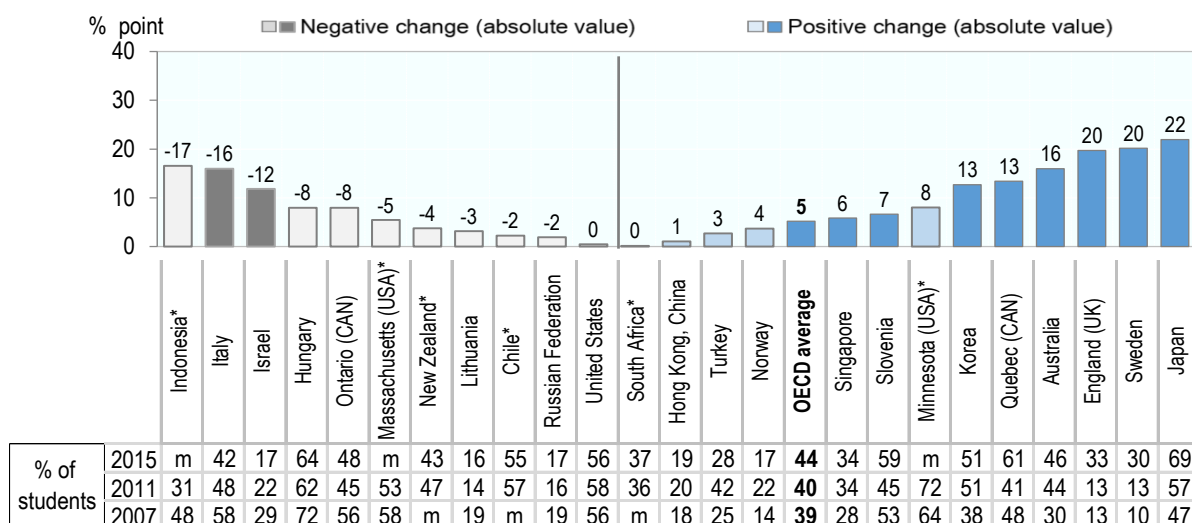
At the OECD level, this practice has more often expanded than retracted, leading to an average net increase of 3 percentage points in the share of 8th grade students regularly exposed to it in science. Combining variations in both directions, the absolute change reached 10 percentage points on average, representing a moderate-low effect size of 0.23. Across the OECD area on average, 28% of the 8th grade students were constantly asked by their science teachers to correct their own homework in 2015 – much less than in mathematics.

#### Countries where there has been the most change

Like in maths, Japan innovated greatly by increasing by 34 percentage points the share of 8th grade students always or almost always asked to correct their homework. Notable positive changes were also witnessed in Slovenia and England. The decreases of 20 and 12 percentage points in Israel and both Ontario (Canada) and Italy represent also an innovation in those systems.

**Figure 8.5. 8th grade students correcting their own homework in maths**

Change in and share of students whose teachers ask them to correct their own homework always or almost always, 2007-2015, teachers report



Note: Darker tones correspond to statistically significant values.

\* refers to calculations based on other years, based on data availability.

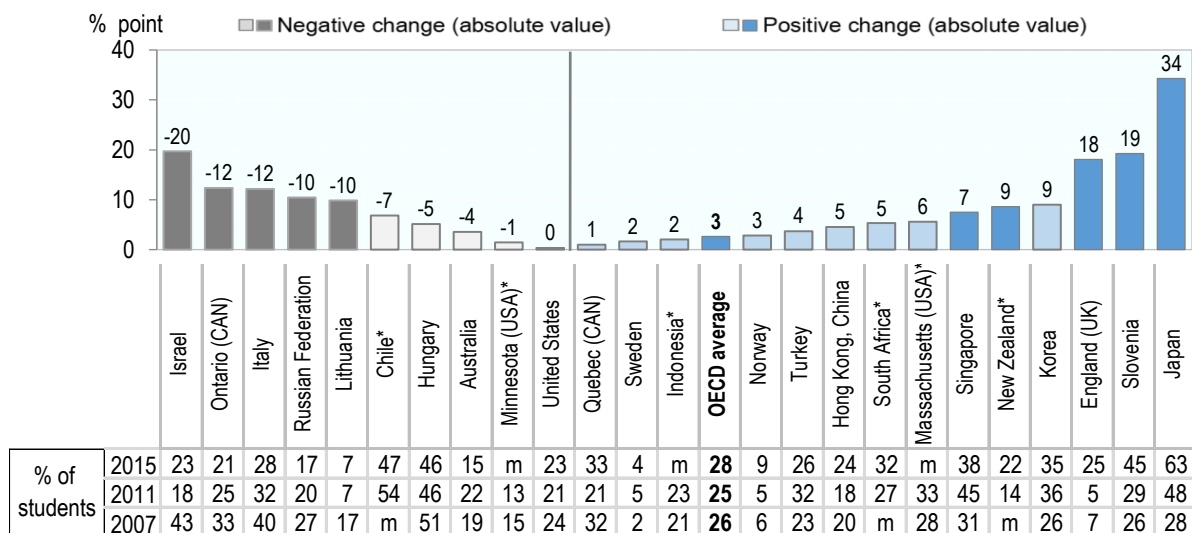
The OECD average is based on OECD countries with available data in 2007, 2011 and 2015.

Source: Authors' calculations based on TIMSS Databases.

StatLink <https://doi.org/10.1787/888933904942>

**Figure 8.6. 8th grade students correcting their own homework in science**

Change in and share of students whose teachers ask them to correct their own homework always or almost always, 2007-2015, teachers report



Note: Darker tones correspond to statistically significant values.

\* refers to calculations based on other years, based on data availability.

The OECD average is based on OECD countries with available data in 2007, 2011 and 2015.

Source: Authors' calculations based on TIMSS Databases.

StatLink <https://doi.org/10.1787/888933904961>

## 50. Discussion of homework in class

### Why it matters

Discussing homework in class is one straightforward way for teachers to correct it in whole-class groups. In some cases, it also allows engaging students to go beyond their homework, to deepen their understanding of the maths and science concepts they have learnt, and also identify what they may have not understood. This is thus a good practice that one would expect to be almost systematic. The flipped classroom even makes of homework discussion and correction the key aspect of class instruction.

### Mathematics

#### Change at the OECD level: large

Between 2007 and 2015, this practice almost unanimously spread in OECD systems. On average, OECD systems recorded a net increase as well as an absolute change of 36 percentage points in the share of 8th grade students frequently discussing their maths homework in class. This corresponds to a very large effect size of 0.83. On average, 58% of students discussed their homework in class in OECD countries. While nearly universal in Hungary and Italy, this practice is far less common in other OECD countries. In Japan for instance, only 4% of the students systematically discussed their homework in maths class.

#### Countries where there has been the most change

The strong innovation in this domain took the form of a large expansion in the use of this method. Outstanding diffusion of the practice characterised Hungary (89 percentage points), Lithuania (70 percentage points) and Quebec (Canada) (61 percentage points). Slovenia and the Russian Federation exhibited also expansions above 50 percentage points.

### Science

#### Change at the OECD level: large

The use of systematic homework discussion in science class has increased in most OECD countries. On average, the proportion of 8th grade science students exposed to this practice went up from 25% in 2007 to 55% in 2015. The 30 percentage-point absolute change in this practice corresponds to a large effect size of 0.66. Japan registered the lowest use of homework discussion in science class, with less than 4% of students concerned in 2015, whereas Hungary recorded the most substantial use (86% of students concerned). The OECD country average was at 55%.

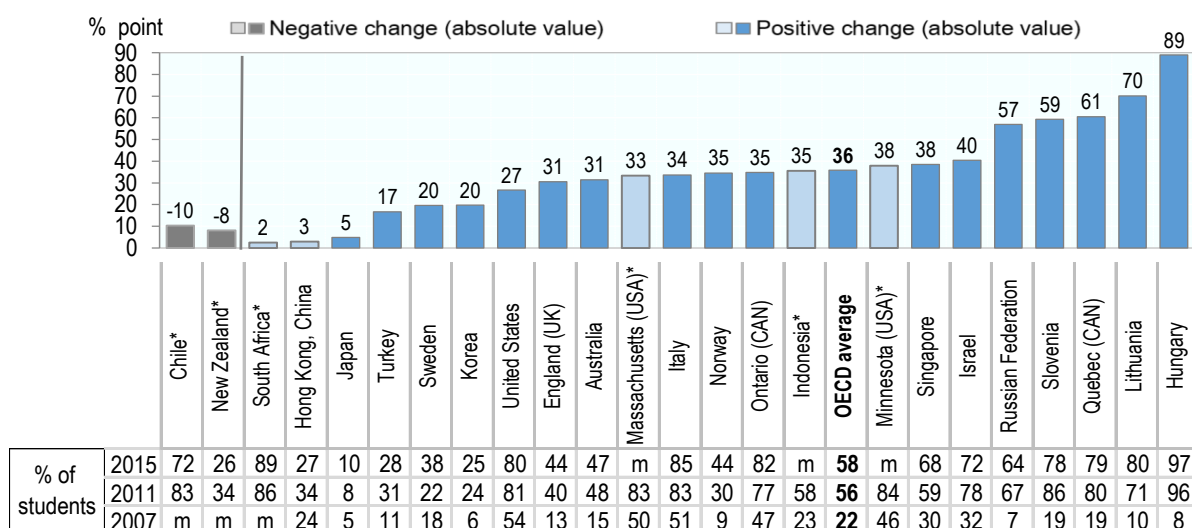
#### Countries where there has been the most change

Innovation was substantial in this practice and occurred through a significant diffusion of its use. Hungary stands out with an increase by 74 percentage points of students concerned between 2007 and 2015, followed by the Russian Federation and Lithuania, both recording 57-percentage point increases. Most other countries also registered significant increases.



**Figure 8.7. 8th grade students discussing homework in maths**

Change in and share of students whose teachers discuss the homework in class always or almost always, 2007-2015, teachers report



Note: Darker tones correspond to statistically significant values.

\* refers to calculations based on other years, based on data availability.

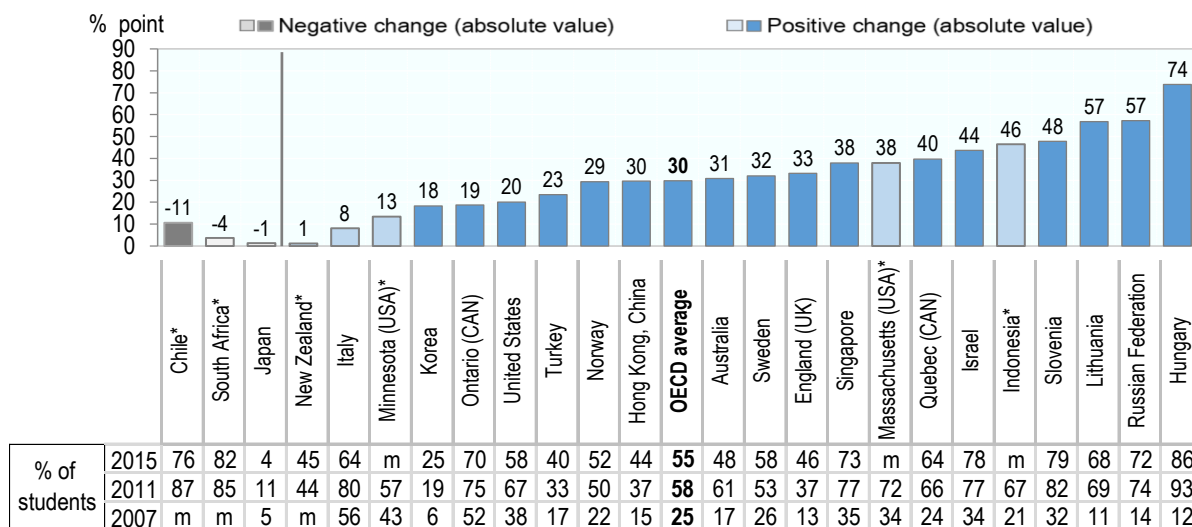
The OECD average is based on OECD countries with available data in 2007, 2011 and 2015.

Source: Authors' calculations based on TIMSS Databases.

StatLink <https://doi.org/10.1787/888933904980>

**Figure 8.8. 8th grade students discussing homework in science**

Change in and share of students whose teachers discuss the homework in class always or almost always, 2007-2015, teachers report



Note: Darker tones correspond to statistically significant values.

\* refers to calculations based on other years, based on data availability.

The OECD average is based on OECD countries with available data in 2007, 2011 and 2015.

Source: Authors' calculations based on TIMSS Databases.

StatLink <https://doi.org/10.1787/888933904999>

**Table 8.1. Effect sizes for changes in homework practices**

	Frequency of homework		Monitoring homework completion		Students correcting their own homework		Discussion of homework in class	
	8th Grade Math	8th Grade Science	8th Grade Math	8th Grade Science	8th Grade Math	8th Grade Science	8th Grade Math	8th Grade Science
Australia	-0.07	-0.07	0.04	-0.05	0.33	-0.09	0.70	0.68
Canada (Ontario)	-0.36	-0.12	-0.33	-0.30	-0.16	-0.28	0.75	0.39
Canada (Quebec)	0.31	0.46	-0.23	-0.13	0.27	0.02	1.30	0.82
Chile	0.02	-0.07	0.09	0.12	-0.04	-0.14	-0.25	-0.28
Hungary	-0.03	m	-0.15	-0.27	-0.17	-0.10	2.22	1.66
Israel	-0.03	-0.12	-0.10	-0.05	-0.28	-0.42	0.83	0.91
Italy	-0.15	-0.13	-0.27	-0.34	-0.32	-0.26	0.75	0.17
Japan	0.10	0.29	0.07	0.12	0.45	0.70	0.18	-0.06
Korea	-0.20	-0.18	0.17	-0.14	0.26	0.20	0.58	0.53
Lithuania	-0.02	m	0.05	-0.01	-0.08	-0.31	1.57	1.26
New Zealand	-0.07	0.06	-0.25	-0.07	-0.08	0.23	-0.18	0.02
Norway	-0.24	-0.19	0.28	0.16	0.10	0.11	0.83	0.62
Slovenia	0.40	m	0.41	0.06	0.13	0.40	1.27	1.01
Sweden	-0.02	m	-0.43	-0.16	0.52	0.09	0.44	0.66
Turkey	0.17	0.27	0.46	0.34	0.06	0.09	0.43	0.53
UK (England)	0.00	-0.01	-0.10	-0.16	0.48	0.51	0.70	0.76
United States	-0.29	-0.18	-0.22	-0.18	-0.01	-0.01	0.58	0.40
US (Massachusetts)	-0.06	0.12	0.01	0.07	-0.11	0.12	0.73	0.78
US (Minnesota)	0.04	-0.20	-0.65	0.09	0.17	-0.04	0.82	0.27
<b>OECD (average)</b>	<b>-0.03</b>	<b>-0.01</b>	<b>-0.03</b>	<b>-0.07</b>	<b>0.11</b>	<b>0.06</b>	<b>0.75</b>	<b>0.62</b>
<b>OECD (av. absolute)</b>	<b>0.17</b>	<b>0.18</b>	<b>0.23</b>	<b>0.18</b>	<b>0.25</b>	<b>0.24</b>	<b>0.83</b>	<b>0.66</b>
Hong Kong, China	0.02	0.12	-0.31	-0.01	0.03	0.11	0.07	0.67
Indonesia	-0.07	m	-0.09	0.16	-0.34	0.05	0.74	0.97
Russian Federation	0.11	m	-0.10	-0.21	-0.05	-0.25	1.31	1.24
Singapore	0.05	0.11	-0.06	-0.07	0.13	0.16	0.79	0.78
South Africa	0.22	0.14	-0.15	-0.12	0.00	0.12	0.08	-0.10

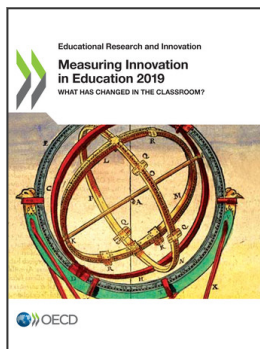
Effect size from -0.5 to -0.2 and from 0.2 and 0.5

Effect size from -0.8 to -0.5 and from 0.5 and 0.8

Effect size equals or less than -0.8 and equals or greater than 0.8

Source: Authors' calculations based on TIMSS (2007, 2011 and 2015).

StatLink  <https://doi.org/10.1787/888933905018>



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