

Maths and Science Skills of Irish Students

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Key Point

The OECD Universal Basic Skills [report](#) (2015) compares the maths and science abilities of 15-year-old students in seventy-six countries¹. This note examines Ireland's performance relative to other high-income OECD countries². Ireland's performance is above average but significantly behind the top performing countries. It also has a significant number of underperforming students and this issue needs to be addressed.

Context

Ireland is one of thirty-one countries in the OECD high-income category (hereafter OECD 31). The average score of students in Ireland was 512, which is above the OECD 31 average of 502. Ireland ranks 11th highest based on its average score for mathematics and science. The five countries with the highest average scores are: Korea (546), Japan (542), Finland (532), Estonia (531) and Switzerland (523). In contrast, the five lowest average scores are found in Chile (434), Greece (460), Israel (468), the Slovak Republic (476) and Sweden (482).

Table 1 shows the average score and percentage share of students achieving less than 420 points³ in the thirty-one high-income OECD countries.

¹ The report combines PISA (Programme for International Student Assessment) (2012) and TIMSS (Trends in International Mathematics and Science Study) (2011). The PISA 2015 assessments took place in Ireland in March 2015 and the major domain was science. The results will be made available in December 2016.

² Hungary, Mexico and Turkey are in the upper-middle income category and therefore are excluded.

³ A score below 420 points represents a lack of basic skills. The OECD states that basic skills are "at least Level 1 skills (420 points) on the OECD PISA" scale. This level of skills corresponds to what might today be called "modern functional literacy" (OECD, 2015: 15).

Table 1 – Average score and share below 420 points (Countries ranked)

Ranking	Country	Average Score	Ranking	Country	Share below 420 points (%)
1	Korea	546	1	Estonia	8.5
2	Japan	542	2	Korea	8.6
3	Finland	532	3	Japan	10.4
4	Estonia	531	4	Finland	10.7
5	Netherlands	523	5	Poland	12.7
6	Switzerland	523	6	Canada	13.1
7	Canada	522	7	Switzerland	13.8
8	Poland	522	8	Netherlands	15.1
9	Germany	519	*9	Ireland	15.1
10	Australia	513	10	Germany	16.1
11	Ireland	512	11	Australia	17.7
12	Belgium	510	12	Slovenia	17.7
13	New Zealand	508	13	Denmark	18.1
14	Slovenia	508	14	Austria	18.5
15	Austria	506	15	Czech Republic	18.7
16	Czech Republic	504	16	Belgium	19.6
17	United Kingdom	504	17	United Kingdom	19.6
18	Denmark	499	18	New Zealand	20.7
19	France	497	19	Spain	21.1
20	Norway	492	20	France	21.8
21	Luxembourg	491	21	Norway	22.3
22	Spain	490	22	Italy	23.2
23	Italy	489	23	Portugal	23.3
24	United States	489	24	United States	23.5
25	Portugal	488	25	Iceland	24.4
26	Iceland	486	26	Luxembourg	24.7
27	Sweden	482	27	Sweden	26.1
28	Slovak Republic	476	28	Slovak Republic	28.8
29	Israel	468	29	Greece	32.5
30	Greece	460	30	Israel	32.7
31	Chile	434	31	Chile	45.3
	OECD 31 average	502		OECD 31 average	20.1%

(Source: [OECD](#), 2015) *Ireland ranks joint 8th

Ireland's share of students below 420 points at 15.1% is joint 8th lowest of the 31 countries. The Netherlands is also at 15.1%. The OECD 31 average is 20.1%, or one in five students. The five countries with the highest share of students below 420 points are Chile (45.3), Israel (32.7), Greece (32.5), Slovak Republic (28.8), and Sweden (26.1). Based on PISA criteria, these five high-income countries have more than a quarter of 15-year-olds who lack basic skills or are functionally illiterate in the modern economy. Conversely, the five countries with the lowest percentage of 15-year-olds who lack basic skills are Estonia (8.5), Korea (8.6), Japan (10.4), Finland (10.7) and Poland (12.7).

Maths

Mathematics was the main focus of the 2012 PISA tests. Ireland's average maths score was 502, which is just above the average of 499 for high-income countries. Ireland's maths ranking is 13th. Irish boys scored on average 15.3 points higher than girls in maths (boys 509.0 and girls 493.7). The three highest maths scores are found in Korea (554), Japan (536) and Switzerland (531). Table 2 shows the maths ranking for the OECD 31.

Table 2 - Maths Score

Ranking	Country	Maths score	Maths boys	Maths girls
1	Korea	554	562.1	544.2
2	Japan	536	544.9	527
3	Switzerland	531	537.4	524.5
4	Netherlands	523	528	517.7
5	Estonia	521	523.2	517.9
6	Finland	519	517.4	520.2
7	Canada	518	523.1	513
8	Poland	518	519.6	515.5
9	Belgium	515	520.1	508.9
10	Germany	514	520.2	506.6
11	Austria	506	516.7	494.5
12	Australia	504	510.1	497.8
13	Ireland	502	509	493.7
14	Slovenia	501	502.7	499.4
15	Denmark	500	507	493
16	New Zealand	500	507.1	492.1
17	Czech Republic	499	504.7	492.9
18	France	495	499.4	490.9
19	United Kingdom	494	500.3	487.8
20	Iceland	493	489.7	495.9
21	Luxembourg	490	502.2	477.1
22	Norway	489	490.4	488.3
23	Portugal	487	492.7	481.3
24	Italy	485	494.2	475.8
25	Spain	484	492.4	476
26	Slovak Republic	482	486.1	476.7
27	United States	481	483.6	479
28	Sweden	478	476.9	479.6
29	Israel	467	472.4	460.7
30	Greece	453	457	449
31	Chile	423	435.5	410.5
	OECD 31 average	499	504	493
	Ireland's ranking	13th	13th	15th

(Source: [OECD](#), 2015)

Science

Ireland's science performance is higher than its mathematics equivalent. Ireland ranks within the top ten in science at 9th place. With a score of 522 points, it is higher than the average of 505 for the OECD 31. Boys are performing marginally better at science than girls in Ireland (boys 523.9, girls 520.0). The three highest science scores are found in Japan (547), Finland (545) and Estonia (541).

Table 3 - Science score

Ranking	Country	Science score	Science boys	Science girls
1	Japan	547	551.9	541
2	Finland	545	537.4	553.9
3	Estonia	541	540.2	542.6
4	Korea	538	539.4	535.9
5	Poland	526	524.4	527.1
6	Canada	525	526.9	524
7	Germany	524	523.9	524.4
8	Netherlands	522	523.6	520.4
9	Ireland	522	523.9	520
10	Australia	522	523.7	519.1
11	New Zealand	516	517.9	513.3
12	Switzerland	515	518.3	512.3
13	Slovenia	514	509.9	518.7
14	United Kingdom	514	520.6	507.9
15	Czech Republic	508	508.7	507.9
16	Austria	506	510.1	501.5
17	Belgium	505	506.8	502.9
18	France	499	497.7	500.2
19	Denmark	499	503.5	493.4
20	United States	497	496.5	498.3
21	Spain	496	500.1	492.7
22	Norway	495	492.8	496.3
23	Italy	494	494.9	492.1
24	Luxembourg	491	498.7	483.5
25	Portugal	489	488.3	490.2
26	Sweden	485	481.2	488.5
27	Iceland	478	476.7	479.7
28	Slovak Republic	471	474.7	467.4
29	Israel	470	469.7	470.4
30	Greece	467	460	473.3
31	Chile	445	448.4	441.6
	OECD 31 average	505	506	505

Ireland's ranking	8th	7th	9th
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(Source: [OECD](#), 2015)

Conclusion

While the performance of Irish students in PISA 2012 was better than in 2009, there remain various areas for improvement. Ireland's average scores in maths and science were higher than the OECD averages; however, maths performance needs to be increased if we are to remain above the OECD 31 average. Furthermore, 15.1% - one in seven - students failed to attain the basic skills score in Ireland. Although below the OECD average, this figure represents the modern functional illiteracy of a significant cohort of 15-year-olds in Ireland.