ESTONIA

IN THE SPOTLIGHT

PISA2015

innove

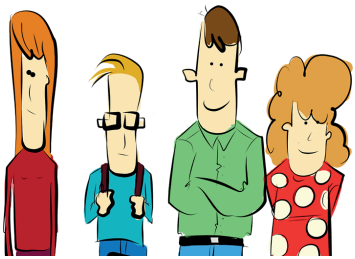
HARIDUS- JA TEADUSMINISTEERIUM

PISA survey

- PISA (Programme for International Student Assessment) is a triennial international survey aiming to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students in mathematics, reading, and science.
- The survey assesses how well 15-year-old students can analyze, reason and apply their skills and knowledge in unfamiliar settings. It also gathers background information on students, including their family background, motivation, learning environment, etc.
- Estonia has participated four times. Each time one of the subjects is the main domain and is explored in more detail (2006– science, 2009– reading, 2012– mathematics, 2015– science). Part of the PISA 2015 science test content is the same as in the assessment of 2006 which makes it possible to explore trends.
- 72 countries and economies participated in PISA 2015.

PISA 2015 in Estonia

- In 2015, there were 11,491 PISA age students in Estonia. Half of them (5,587) took the test (2,788 girls and 2,799 boys) and they were from 206 schools. Most PISA students in Estonia study in grade 9.
- 78% of the students took the test in Estonian and 22% in Russian.
- Together with 57 other countries, Estonia participated in computer-based test assessment; the rest of the countries took the paper-based test.



Estonian results

- Estonian students rank highly among assessed countries and have maintained high results in all domains of assessment. Japan, Estonia, Finland and Canada are regarded as the four highest-performing OECD countries.

- Estonia has the smallest share of low-performing students in all domains among the European Union countries (less than 5%), whereas the EU average is 12.3%.
- High student performance is achieved with more modest financial resources and shorter learning time than in many other OECD countries.
- The share of top performers has increased in science and reading and the number of low performers in reading has decreased.
- The biggest improvements have been made in reading, mostly among boys.
- In all assessed domains, there is a significant difference in performance between schools with Estonian and Russian language of instruction. Although Russian-medium schools have improved over time, the gap with the Estonian-medium school is still approximately one school year.

Science

- **In science, Estonian students rank 1st in Europe and 3rd in the world after Singapore and Japan with the mean score of 534 points (the OECD mean is 493).**
- Compared to previous surveys there are more (13.5%) top performing students who can solve complex and very complex tasks (the OECD mean is 8%).

- 91.2% of Estonian students have reached baseline knowledge in all science subjects (the OECD mean is 78.8%).
- Among the European countries, Estonia has the smallest share of students whose knowledge and skills are below the baseline level. Estonia and Finland are the only two European Union countries that have reached the EU benchmark (below 15%) of low achievers: 8.8% in Estonia and 11.5% in Finland. The EU average is 20%.
- There is no performance gap between boys and girls in science.
- Estonian school teaches science as separate subjects: biology, geography, physics, and chemistry. Estonian students score among the best in the world in science.

Mathematics

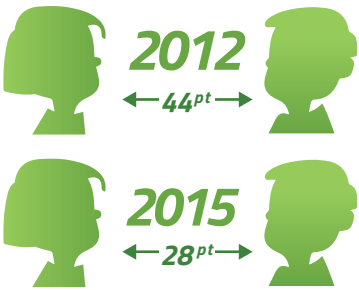
- **In mathematics, Estonian students rank 2nd in Europe after Switzerland (sharing the 1st and 2nd place) and 9th in the world with the mean score of 520 points (the OECD mean is 490).**
- 14.2% of Estonian students are top performers in mathematics (the OECD mean is 10.7%).
- 88.8% of Estonian students have reached baseline knowledge and skills in mathematics. This places Estonia among the top 5

performing countries in the world. Estonia ranks after Macau (China), Singapore, Hong Kong (China) and Japan.

- Among the EU Member States, there are three countries that have reached the EU benchmark (below 15%) of low-performing students: Estonia (11.2%), Denmark, and Finland (13.6% each).
- There is no performance gap between boys and girls in mathematics.

Reading

- **In reading, Estonian students rank 3rd in Europe after Finland and Ireland, and 6th in the world with the mean score of 519 (the OECD mean is 493).**
- The results of the Estonian students have improved significantly since 2006: the score has improved by 19 points.
- The number of top performers in reading has increased by 5% compared to 2009 and the share of low-performing students has decreased. There are not many countries that can show a similar trend.
- Among the EU Member States, there are only four countries that have reached the benchmark (below 15%) of low performers: Ireland, Estonia, Finland, and Poland.
- In PISA 2012, the performance gap between boys and girls was 44 points; in 2015, the gap was only 28 points. The gender gap has decreased in many other countries as well, showing improvement in boys' reading skills.



Estonian student

Socio economic background

- 48% of the students with low socio economic background achieved high results in science, placing Estonia 1st in Europe and 6th in the world.
- In regard to performance of students with low socio economic background, Estonia is among the top ten countries in the world – four students out of ten achieved very good results.
- Students' socio economic background accounts for only 8% of the variation in science performance.

Are students motivated to study science?

- Estonian students' interest towards science has increased by 5.6% since PISA 2006.
- 71% of Estonian students say they have fun while learning science topics. In regard to the OECD countries, only students from Mexico (86%), Canada (75%), Portugal (74%) and US (72%) report having more fun while learning science.
- 74% of Estonian students say that learning science is useful because it will help them get the desired job in the future (the OECD average is 69%).

What do Estonian students want to do in the future?

- Around 25% of Estonian students imagine having a future career in science.
- Among the OECD countries, IT (information technologies) is the most popular future aspiration for Estonian 15-year-olds. 12.5% of Estonian top performers wish to work in that field in the future.
- Compared to PISA 2006, more students have a clear vision of their future aspirations. In 2006, the share of students who did not know what to say about their future career was 26%; in 2015, the share of undecided students was 15%.
- The most popular future profession was company or business manager, followed by IT specialist, lawyer, doctor, psychologist, programmer and chef. Many students also mentioned professions like designer, musician, actor, and coach.
- 43% of Estonian students wish to obtain higher academic education.

Estonian school

- Estonian schools are quite equal. Compared to other participating countries, differences between schools in Estonia are smaller, being only 16.8%.
- Estonian students spend on average 24.5 hours per week studying at school, which is less than in most OECD countries. In Australia, the Czech Republic, Estonia, Finland, Germany, Japan, Macau (China), the Netherlands, New Zealand, Sweden and Switzerland, there is a good balance between study time and academic performance.
- Estonian schools offer their students many possibilities to participate in different science competitions; in that aspect, Estonia ranks 6th in the world.
- In Estonia, rural schools and schools with lower socio economic background have more computers than urban schools and schools with higher socio economic background.

What is behind the good results of Estonian students?

- Excellent job done by Estonian students, teachers and schools.
- Education is highly valued in society now as well as historically. Parents place quite high demands on their children and on the school.
- There is almost universal access to quality early education. Over 90% of children attend a pre-school educational establishment.
- Estonian educational system is based on equity and the comprehensive school principle. All students have equal access to education and the first streaming takes place after grade 9 at the age of 16 (end of basic school).

- Schools must provide the best learning environment for everyone regardless of the students' socio economic background. All children get free text books and school lunch. Access to extra-curricular activities such as sports, arts, or subject-related clubs is often free.
- Schools have to support students with speech therapists, social pedagogues and psychologists if needed. They have to make it possible for students to get additional instruction on individual level. Grade repetition is rather an exception. Students have to get help in order to move on.
- Estonian schools and teachers have great autonomy. School principals have the right to hire and fire teachers and decide on needs for teacher training. Schools have the freedom to shape their own curricula following the guidelines set in the national curricula. Accountability is ensured by monitoring of learning outcomes on state and school levels. The collected data helps to develop evidence-based policies.
- The goals and priorities set in the national curricula in 1996 have been updated regularly (in 2002 and in 2010). Priorities and strategic goals in education have been set on national level in the Estonian Lifelong Learning Strategy 2020.
- Despite the recession, Estonia increased the educational costs per student by 30% during 2005–2012. The teachers' salaries in Estonia have increased by 40% during the past five years.

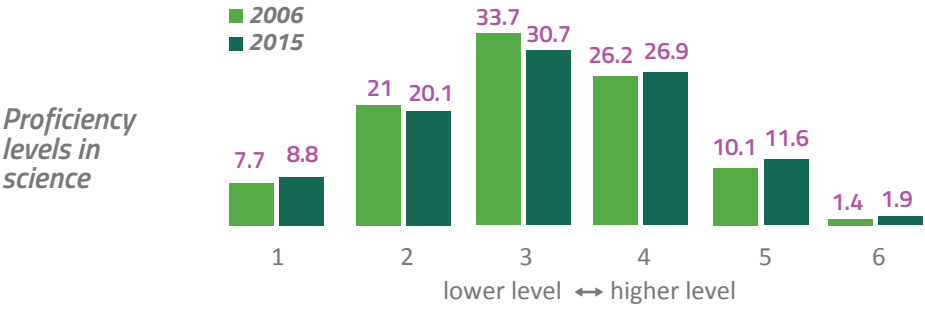
Mean score in science in PISA 2015

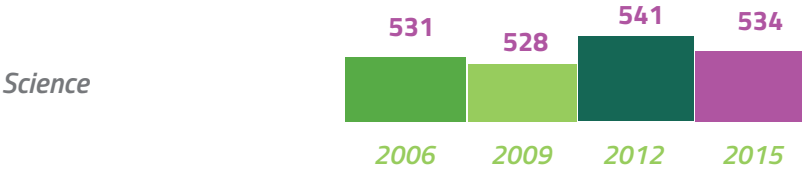
Mean score	Country/ economy	Average 3y trend
556	Singapore	7
538	Japan	3
534	***Estonia***	***2***
532	Chinese Taipei	0
531	Finland	-11
529	Macau (China)	6
528	Canada	-2
525	Viet Nam	-4
523	Hong Kong (China)	-5
518	B-S-J-G (China)	n/a
516	Korea	-2
513	New Zealand	-7
513	Slovenia	-2
510	Australia	-6
509	United Kingdom	-1
509	Germany	-2
509	Netherlands	-5
506	Switzerland	-2
503	Ireland	0
502	Belgium	-3
502	Denmark	2
501	Poland	3
501	Portugal	8
498	Norway	3
496	USA	2
495	Austria	-5
495	France	0
493	Sweden	-4
493	Czech Republic	-5
493	Spain	2
490	Latvia	1
487	Russia	3
483	Luxembourg	0
481	Italy	2
477	Hungary	-9
475	Lithuania	-3
475	Croatia	-5
475	Buenos Aires	51
473	Island	-7
467	Israel	5
465	Malta	2
461	Slovak Republic	-10
455	Greece	-6
447	Chile	2
446	Bulgaria	4
437	United Arab Emirates	-12
435	Uruguay	1
435	Romania	6
433	Cyprus	-5
428	Moldova	9
427	Albania	18
425	Turkey	2
425	Trinidad and Tobago	7
421	Thailand	2
420	Costa Rica	-7
418	Qatar	21
416	Colombia	8
416	Mexico	2
411	Montenegro	1
411	Georgia	23
409	Jordan	-5
403	Indonesia	3
401	Brazil	3
397	Peru	14

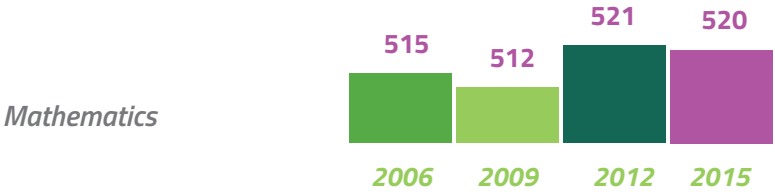
Statistically significantly above the OECD average
Not statistically significantly different from the OECD average
Statistically significantly below the OECD average

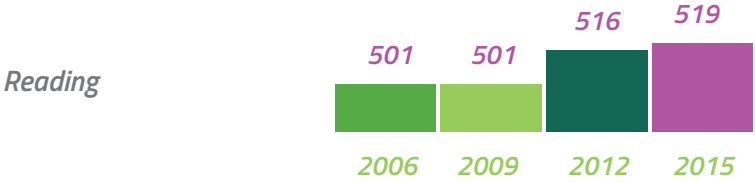
493	OECD	-1

Proficiency levels in science and mean score points for Estonia









What makes a good learning environment according to PISA:

1. ***Students*** *attend school regularly, listen to the teacher, treat other students with respect, and do not disrupt the instruction.*
2. ***Teachers*** *cooperate with each other, support their students by showing interest in every student, providing extra help or giving students opportunities to explain their ideas.*
3. ***School*** *principals ensure that that children with different abilities and from different backgrounds are given the same opportunities to learn, react swiftly when behavioural and academic problems arise, and ensure that a range of extracurricular activities are offered at school.*
4. ***Parents*** *participate in school activities (not only when their children have problems) and interact with other parents.*
5. ***Governments*** *use assessments, information systems and mechanisms to identify individual schools that are struggling and may need special assistance.*

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