

Estonian success in PISA - what are the reasons behind that?

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Introduction

Estonian students have achieved remarkably good results in international studies.

These studies have revealed that:

- ▶ the Estonian educational system has been successful in supporting the learning of all students;
- ▶ the student's home socio-economic background has less impact on performance than it does in other countries;
- ▶ we have the lowest level of low-performers in Europe in reading math, science.



The main changes in the Estonian education system in last decades

The rebuilding of the Estonian education system occurred in three main areas:

- ▶ the development of a new National Curriculum;
- ▶ reorienting teacher training and focusing on more innovative teacher practices and student-centred approaches;
- ▶ upgrading the vocational education and training (VET).



The reasons for the success

- ▶ Education is valued in Estonia
- ▶ Equal opportunities
- ▶ Comprehensive school - the compulsory education is free of charge.
- ▶ National Core curriculum
- ▶ Academically qualified teachers at all levels of education
- ▶ Schools and teachers have a wide autonomy in how they provide instruction and decide about the



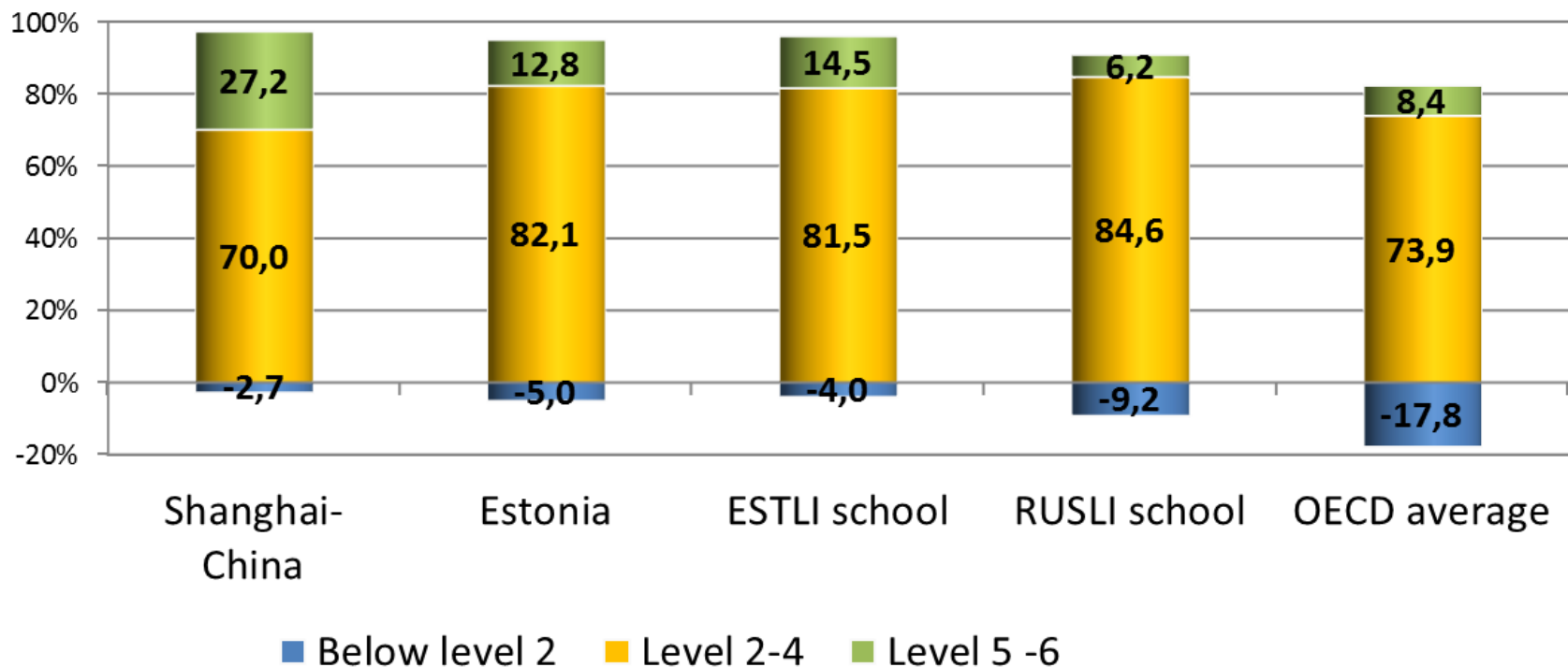
The country specific findings

International studies have revealed that:

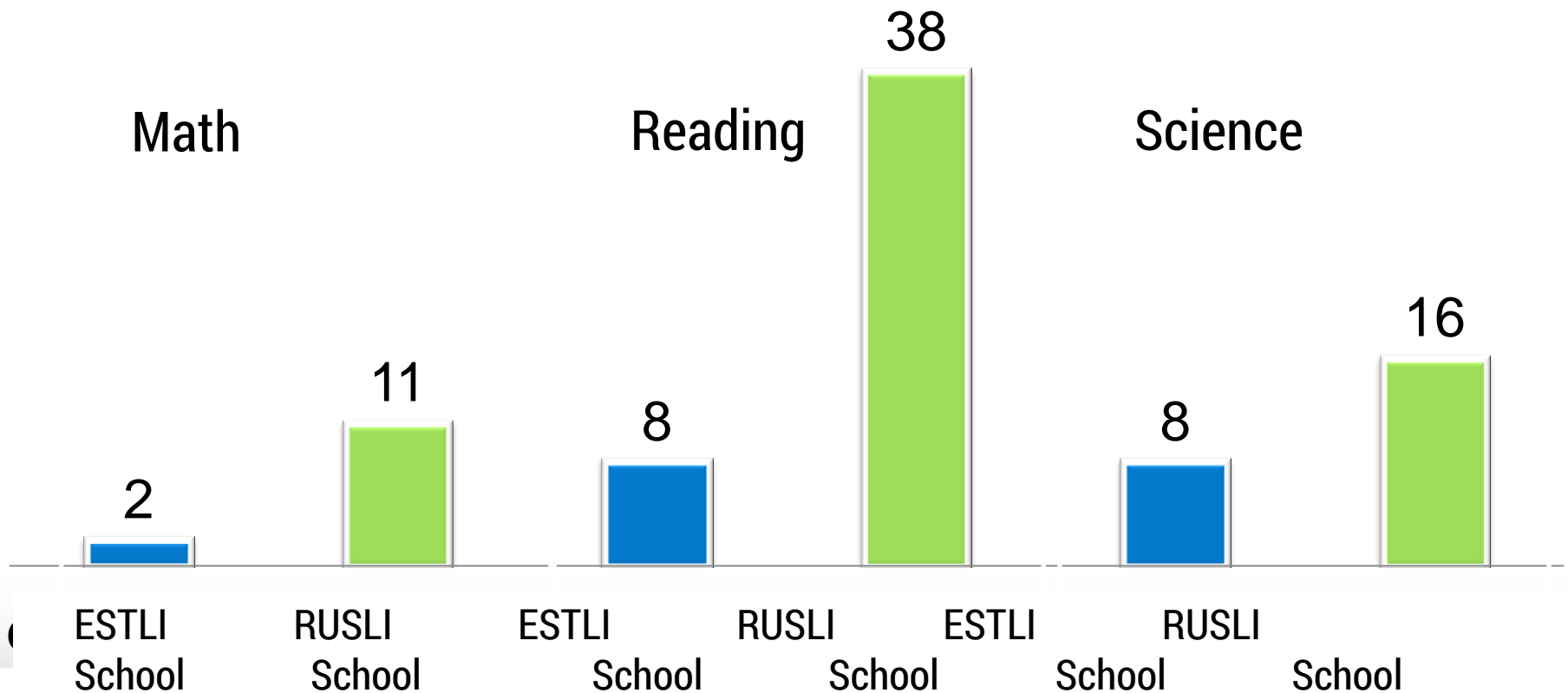
- ▶ there are fewer students compared to other high-performing countries, at higher achievement levels.
- ▶ there were statistically significant differences in science competences between Estonian and Russian language-instructions schools.



The modest number of top-performers in science in PISA 2012



Russian language-instruction school's performance improved significantly between PISA 2006 and 2012



Conceptual model to explain learning outcomes

	Antecedents	Processes	Outcomes
System level	Macro-economic, social, cultural and political context	Tracking, funding, teachers qualification etc	System level outcomes, literacy
School level	Characteristics of school (funding, size, parents etc)	Policies and practices (assessment, admittance, school climate etc)	Learning outcomes at the school level (affective outcomes, learning strategies)
Classroom level	Teacher qualification, age, orientation etc	Learning environment (student teachers relations etc)	Average performance (classroom motivation to learn, etc)
Student level	Individual background (SES, age, gender, language)	Individual learning process	Individual outcomes

Educational model reveal the complexity of variables and relationships that potentially influence student outcomes (Scheerens and Bosker, 1997).

Theoretical background

- ▶ The students' achievement is connected with national cultural values (Planel, 1997; Reinikainen, 2007).
- ▶ The teaching practices are related to student outcomes (Wang, Haertel and Walberg, 1993).
- ▶ The Estonian language instruction schools are more oriented towards the success of student's individual achievements and the Russian language instruction schools rather towards the collective success of whole class. (Kallas, Veisson, 2006).



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The secondary analyses have revealed

- ▶ The difference in the science competencies and attitudes between different language instruction schools are not due to:
 - ▶ language problems;
 - ▶ immigration status;
 - ▶ socio-economic status;
 - ▶ low motivation rate.



The students of Russian language instruction schools reported higher levels of motivation, interest in science and awareness about science related careers (Henno, Reiska 2013).

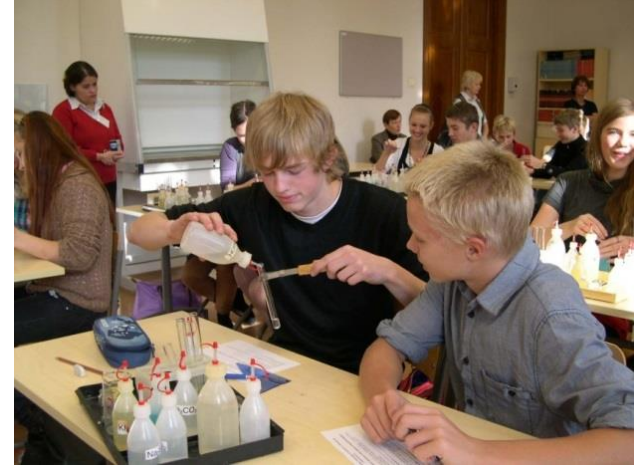


Teachers beliefs

- ▶ There were statistically significant differences between different language instruction schools science teachers' instructional beliefs.
- ▶ Russian language instruction schools' science teachers supported more direct transmission instructions, Estonian language instruction schools' science teachers supported more constructivist view.



Classroom instructions



- ▶ It was appeared that Estonian science teachers are not sufficiently oriented to shape students' higher order thinking skills.
- ▶ There was a gap between official curriculum approaches and teachers' implementation practices.
- ▶ A scientific inquiry as a more student centred approach was not very common in Estonian science lessons.



Conclusions (1)

- ▶ The secondary analysis of PISA 2006, 2012 and TALIS results revealed the different educational practices in Estonian schools.
- ▶ The Estonian science teachers do not rely on a constructivist educational paradigm and kept to rather traditional teaching practices in everyday teaching.
- ▶ The interactive science teaching had not a positive impact on students' achievement



Conclusion (2)

- ▶ The student`s performance differences and the modest number of top-performers in Estonia are connected with classroom level instructional approaches and learning culture.
- ▶ The Estonian students' good science results in TIMSS and PISA may explained relatively strong 'academic approach' as well as clear and well structured classroom management.
- ▶ The data need follow-up interpretations and next step of studies.



Questions?

Thank you.

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