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Finland: Success Through Equity—The Trajectories in PISA Performance



Arto K. Ahonen

Abstract The Finnish education system has gone through an exciting developmental path from a follower into a role model. Also on the two-decade history of PISA studies, Finland's performance has provided years of glory as of the world's top-performing nation, but also a substantial decline. This chapter examines Finland's educational outcomes in recent PISA-study and the trends across previous cycles. Boys' more unsatisfactory performance and the increasing effect of students' socio-economic background are clear predictors of the declining trend, but they can explain it only partly. Some of the other possible factors are discussed.

1 Finnish School System

It is still possible to identify a particular Nordic political philosophy entrenched in the Nordic model of society. The Nordic model emerges as a composite of two large European models: the Anglo-Saxon model's emphasis on economic liberalism and competition, and the Continental model's emphasis on a large public sector, social welfare and security (Telhaug et al. 2006). In the Nordic countries, social security still exists in the form of well-developed public services and a comprehensive well-functioning education system. The Nordic countries have invested more than most of the other nations in the education sector: the level of education is high, the state school is highly regarded, the principle of equal opportunities is adopted, and school standards are reasonably homogenous throughout the nations.

Basic education in Finland is provided free of charge for all age groups. If a pupil cannot attend school for medical or other reasons, the municipality of residence is obligated to arrange corresponding instruction in some other form. In most of the cases, students with special education needs are integrated on the mainstream classes, and only the students with very severe disabilities study in special education classes. These special education classes are in most cases located on regular schools, and there are only very few (70 in the year 2018) special education schools left as separate

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121

institutions. There are also some private schools in Finland, but the number of them is minimal. Altogether about 2300 schools provide comprehensive basic education. Ninety-five per cent of all schools are run by the communities and financed by the government. Also, the approximately 80 privately run schools accepted by the Ministry of Education receive their funding from the government. Private schools usually follow the general pedagogical core curriculum. Some are international or certain national (German, French, Russian). Also, some of them have a religious character or use a distinctive educational approach such as Montessori-, Freinet- or Steiner-pedagogy.

Compulsory education lasts for ten years, including a one-year compulsory pre-school class for 6-year-old pupils. In practice, all Finns complete nine-year comprehensive education. Following basic education, there are two main possibilities to choose from: upper secondary general education and vocational education, which both last three years. Both alternatives provide basic eligibility to continue studies at the post-secondary level (Fig. 1).

The network of comprehensive schools is supposed to cover the entire country. Free transportation is provided for school journeys exceeding five kilometres. Comprehensive school in Finland is legally one unit. However, due to former governance, it is still often divided into two levels: a lower level at grades 1–6 (primary) and grades 7–9 (lower secondary). Traditionally, class teachers instruct all subjects on the primary level. At the lower secondary level, the teaching is organised by subject teachers, who teach their major subject(s) only. There are also a growing number of comprehensive schools, where all the instruction is given in one school building by one group of staff. Nevertheless, the division on class teachers and subject teachers still exists, and their training is organised on separate programs in the universities.

About 95% of all the pupils that complete nine years of comprehensive school continue in upper secondary education (53% in general upper secondary education and 42% in vocational education). Both streams of upper secondary education are three-year programs, and they produce eligibility to continue on tertiary education. In practice, the majority of university applicants graduate from the general upper secondary schools. Meanwhile, the majority of students completing vocational education enter the workforce or continue their studies at the Universities of Applied Sciences.

2 Finland's Educational Outcomes in Comparison

2.1 Trend Across PISA Studies 2000–2018

According to the PISA 2018 survey, Finland still has a high level of competence in international comparison, as Finland represents the top of the European and OECD-countries together with Estonia (OECD 2019b). The top positions are dominated by the education systems of Asian countries, where the starting point for schooling is

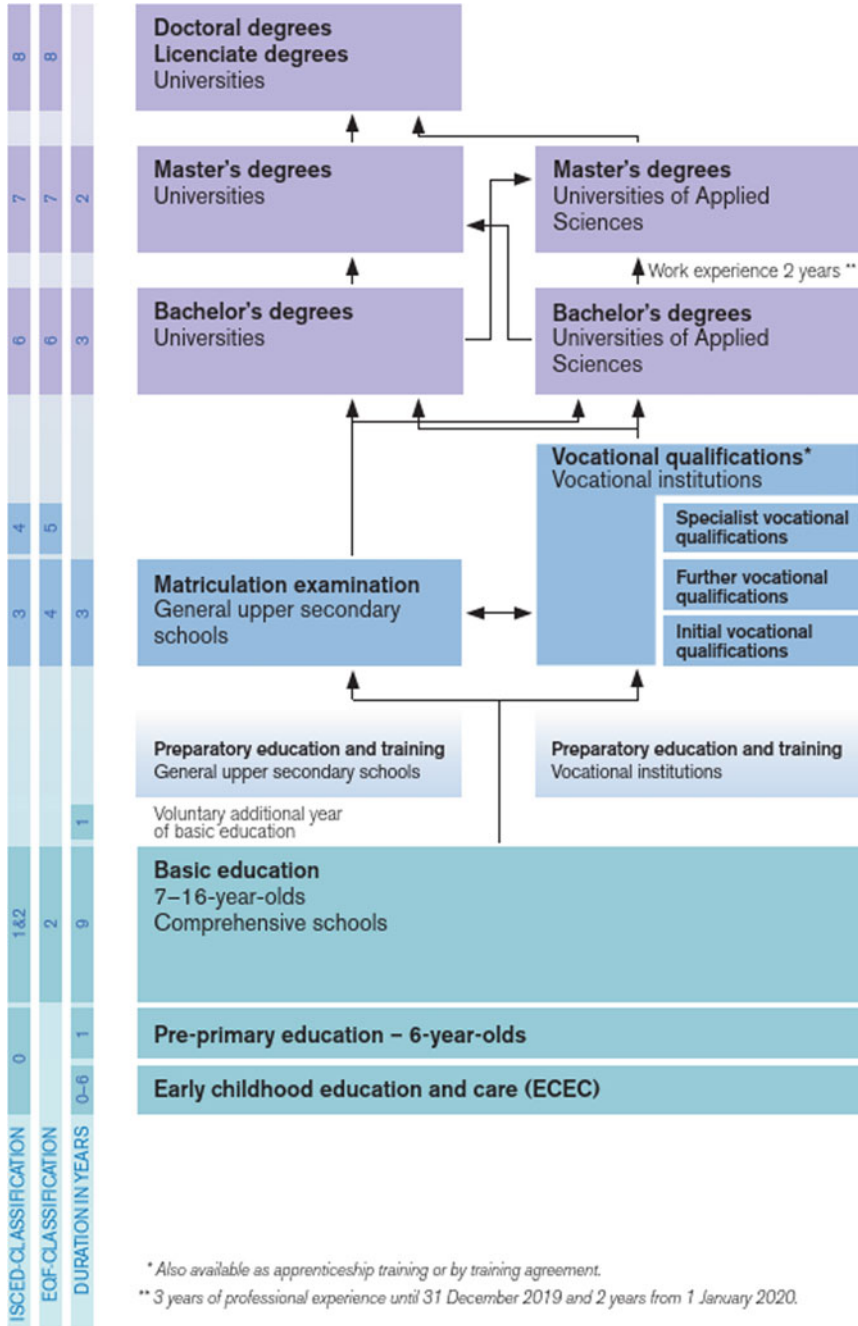


Fig. 1 Education system in Finland (Ministry of Education and Culture 2019)

very different from that of Finland (Sahlberg 2012). Some English-speaking countries, such as Canada and Ireland, run almost parallel to Finland. In the other Nordic countries, on the other hand, competence is lower than in Finland in all other assessment areas except mathematics. In PISA 2018, Finnish 15-year-olds were one of the best in reading literacy (mean score 520) in the OECD-countries together with Estonia (523), Canada (520), Ireland (518) and Korea (514). Among all the countries and economies, Finland was preceded by China's BSJZ (Beijing-Shanghai-Jiangsu-Zhejiang) area (555) and Singapore (549). The average scores of Macao-China and Hong Kong-China were also among those, whose scores did not differ statistically significantly from those in Finland. Finland's mean reading score fell by 6 points compared with PISA 2015, but the change was not statistically significant. A longer-term review also shows that the trend in reading literacy is declining not only in Finland but also in the OECD countries on average. Finland's mean score has dropped by 16 points relative to 2009 and by 26 points relative to 2000.

Mathematical literacy (mean score 507) was in PISA 2018 still well above the OECD average. Finland's ranking was between 7 and 13th among OECD countries and between 12 and 18 among all participating countries and economies. The Finnish average does not differ statistically from Canada (512), Denmark (509), Belgium (508), Sweden (502) and the United Kingdom (502). The European countries that outperformed Finland statistically significantly were Estonia (523), the Netherlands (519), Poland (516) and Switzerland (515). Although Finland's mean score dropped by 4 points from PISA 2015 the change was not statistically significant, so mathematical literacy effectively remained at its previous level.

The performance of Finnish students in science literacy (522) ranked among the third-best in the OECD countries immediately after Estonia (530) and Japan (529). The Finnish score did not differ statistically significantly from Korea (519), Canada (518), Hong-Kong-China (517) and Taiwan (516). Finland's score on science has fallen steadily, dropping by a total of 41 points since 2006 and statistically significant 9 points from 2015.

Compared to the previous PISA assessment in 2015, the average scores in different assessment areas in Finland had decreased statistically significantly only in science. Averages in reading and mathematical literacy have remained at almost the same level since 2012. However, a longer-term review (Fig. 2) shows that there has been a steady decline in Finland since 2006. In the recent PISA 2018 cycle, reading literacy was the main assessment area, which means that the most comprehensive assessment construct was obtained. By comparing the latest results with those years 2000 and 2009 of reading literacy being the main assessment domain, the averages have fallen clearly and statistically significant.

Over 14% of Finnish students had excellent reading proficiency at levels 5 and 6, which was roughly the same as in 2009 (15%). The number of top-performing students on level 6 even rose marginally from 2009, but the change was not statistically significant (Fig. 3). The number of low-performing readers (below level 2) increased by more than five percentage points in Finland compared with PISA 2009 and 2.5 percentage points compared with PISA 2015. Both are statistically significant

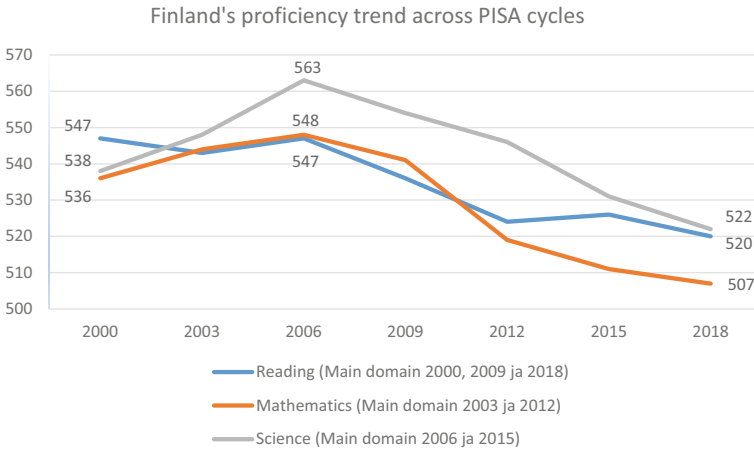


Fig. 2 Finland's proficiency trends across PISA 2000–2018

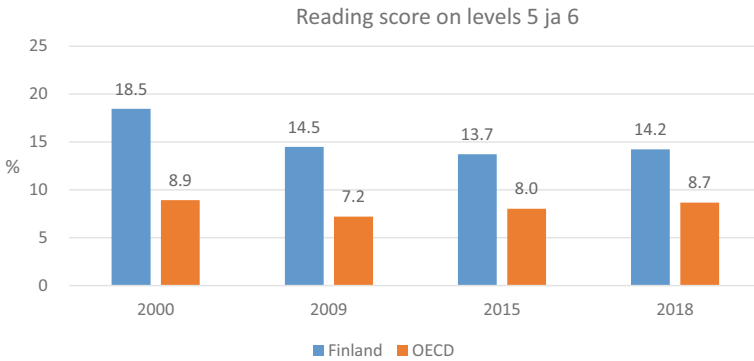


Fig. 3 Percentage of Finland's 15-year-olds reading score on levels 5 and 6

changes. Level 2 proficiency, also referring to United Nations Sustainable Development Goals, has been identified as the minimum level of proficiency that each child should acquire by the end of their secondary education (OECD 2019a, p. 89). It is a serious concern that there are now, more than ever in the twenty-first century, young people whose reading proficiency is too weak for studying and participating in society. This is the situation both in Finland and across OECD countries (Fig. 4).

2.2 Gender Gap

In Finland, the gender gap in reading literacy performance has consistently been one of the highest in the participating countries. It was one of the highest in OECD

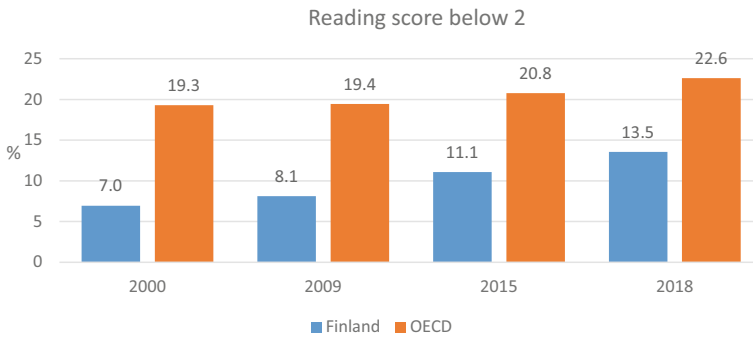


Fig. 4 Percentage of Finnish 15-year-olds reading score below 2

countries at this time too (OECD 2019b). The difference in favour of girls was 52 points, compared with an average of 30 points in OECD countries. Altogether 20% of Finnish girls but only 9% of boys ranked at the highest performance levels 5 and 6 (Fig. 5). Similarly, 20% of boys and 7% of girls were among the poorest performing readers. Among boys, the number of low-performing readers has increased by up to 7 percentage points since 2009, and among girls, the increase has been four percentage points.

For nearly two decades, the reading literacy performance of Finland has highlighted the substantial differences in skills between girls and boys. The difference in reading score among Finnish girls and boys was still the largest in the OECD countries. Also, in science, girls’ skill levels were higher than those of boys since 2009. In mathematics, the average for girls reached boys in 2012, after which girls have

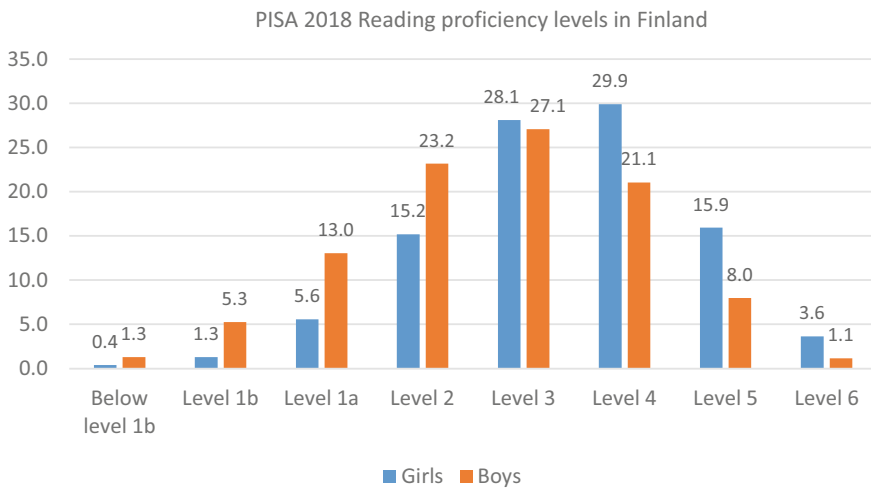


Fig. 5 PISA 2018 reading proficiency levels in Finland by gender

done better than boys in all the domain areas. Also, in science literacy, the gender gap in Finland was the largest in the OECD countries.

2.3 Socio-economic Background

The educational background and occupation of parents and family wealth (socio-economic background) linked to the reading proficiency of students in all participating countries (OECD 2019c). In Finland, the average difference in reading proficiency between the top and the bottom socio-economic quarters was 79 score points. In OECD countries, the corresponding difference was 88 score points. In Finland, the link between students' socio-economic background had become more marked since 2009 when it was 62 points. The poorer outcomes in the bottom quarter can explain this trend at least partly. In 2009, the average reading proficiency in the top quarter was 565 score points, remaining virtually unchanged in 2018 at 562 points. By contrast, the performance of the bottom quarter in 2018 (483 points) was 21 points lower than in 2009 (504 points).

3 Timely Changes, Trends and Explanatory Factors of PISA Proficiency in Finland

3.1 Long-Term Declining Trend

The longer-term decline in proficiency seems to be driven by the increase in the number of weak performers in all assessment areas in Finland. In terms of reading literacy, the share of excellent readers (levels 5 and 6) in the student population has remained unchanged since 2009. However, the share of weaker readers (below level 2) has increased by more than five percentage points. Currently, about 14% of young people in Finland do not reach a sufficient level of reading literacy to be prepared for further studies and life as a full member of society.

The average score of the most highly proficient students in reading literacy decile in Finland has remained practically the same since 2000. At the same time, the average reading literacy score of the lowest proficient decile has declined by about 9 points, which is a statistically significant change. The different development of deciles also reflects the more considerable variation in students' reading literacy scores. The gender gap in skills is also evident when looking at performance levels. There were more excellent female readers than male ones. Similarly, the number of weak male readers was significantly higher than that of the female.

In mathematics, the decline in results has been even. Compared to 2012, when mathematics was the main domain, the decline in mathematics competence is reflected in both a decrease in the number of excellent students (4 percentage

points) and an increase in the number of weak ones (3 percentage points). Since 2003, the average score of the best-performing decile in Finland has fallen by 9 points and the weakest decile by 10 points. When compared between genders, mathematical skills are somewhat equal. However, even in mathematics, a slightly higher proportion of boys were poorly qualified than girls.

In science, the share of top performers has fallen by nine percentage points since 2006, and the share of weak talents has risen to the same extent. As regards the variability of skills, the average drop in the performance of pupils with the lowest decile in science is 16 points since 2006. At the same time, the gap between the best and the weakest decile has also widened. Similarly to reading literacy, in science, the proportion of girls among the best performing decile was higher than the boys. Also, the proportion of boys was more substantial among the weakest performing decile.

For further education, postgraduate studies and working life, it is the weakest performing students who should be most concerned, because their level of competence is not sufficient for further studies and active participation in society. They are in great danger of being marginalised even after the completion of basic education. In light of the current results, the number of weak performers is in danger of further increasing, and a large proportion of them are boys.

3.2 Reading Engagement Strongly Linked with Reading Proficiency

As has been shown in the past in PISA studies, commitment to reading is a significant factor of literacy. Also, other international evaluation studies, such as PIRLS (Progress in International Reading Literacy Study) and TIMSS (Trends in International Mathematics and Science Study) have found an association between engagement and hobbyism and skill levels, whether measured in reading, mathematics or science (see Mullis et al. 2016, 2017; Martin et al. 2016).

Of all the countries participating in the PISA 2018 assessment, Finland was among the three countries where the interest in reading had decreased the most. More and more young people read only if they have to. Indeed, the joy of reading is currently one of the most critical goals in which pupils' parents and society as a whole can be involved. The decline in the interest in reading reflected the fact that the time spent on reading for pleasure was on average reduced. The time spent on reading explained 12% of the variation of reading literacy in Finland and 6% across OECD countries. The results show that even a small amount of daily reading has an impact on young people's literacy levels. The students who reported reading for pleasure half-an-hour daily outperformed those who did not read at all by 60 score points, and those who read one to hours daily outperformed no-readers by 95 score points.

In Finland, engagement with reading explains the variation in outcomes more so than in the OECD countries on average (Leino et al. 2019). In Finland, more students than before reported in PISA 2018 study a negative attitude towards reading. The

number of students who considered reading as their favourite hobby had decreased by nine percentage points since 2009. Correspondingly, the number of students who read only if they had to or only if they needed information had increased by 16 percentage points. In Finland, 15% of boys agreed or strongly agreed that reading was one of their favourite hobbies, whereas the corresponding figure for girls was 36%. In the OECD countries, the corresponding figures were 24% for boys and 44% for girls. What is particularly worrying is that as many as 63% of Finnish boys agreed or strongly agreed to the statement: “I read only if I have to.”

In Finland, reading-related variables as a whole were stronger explanatory factors of reading literacy than the socio-economic background of the pupil (Leino et al. 2019). Across OECD countries, on the other hand, the socio-economic background was stronger explanatory factor than several reading-related variables. Compared to OECD countries, the unique features of the Finnish PISA data were the relatively strong association between persistence, gender and level of reading performance. In Finland, perseverance explained 8% of the variation in literacy. Meanwhile, gender explained 7%. These degrees of explanation correspond to a magnitude correlation of 0.30. In OECD countries, perseverance and gender explained only 3% and 2% of the reading variance, respectively. In Finland, immigrants’ background association with reading literacy was also stronger than in the OECD countries on average. However, only 5% of the variation of reading literacy in Finland was explained by the immigrant background (2% in OECD countries).

4 Well-Being and Equity—The Cornerstones of Finland’s High-Quality Education

4.1 High Level of Life Satisfaction

The subjective well-being indicators of Finnish youth were at a reasonable level. 15-year-olds in Finland were somewhat satisfied with their lives (on average, 7.61 on scale 1–10). In terms of material and objectively measurable factors, Finland is of the wealthiest nations in the world; ahead of us were the other Nordic countries as well as Canada and Australia. When looking at the relationship between life satisfaction and knowledge, Finland stood out from other countries and education systems (Fig. 6). Finland was the only country with high levels of reading performance and life satisfaction. For example, in all Asian countries with high levels of knowledge, life satisfaction was low, and in countries with high levels of life satisfaction, reading proficiency was mostly weak. This begs the question of whether life satisfaction and knowledge are the opposite of a double-edged sword and is Finland only an exception to this phenomenon?

Pupils’ sense of belonging to their school was in Finland at the level of the OECD average, and pupils did not feel that they had much cooperation with their classmates. However, the experience of cohesiveness among Finnish students was strongly linked

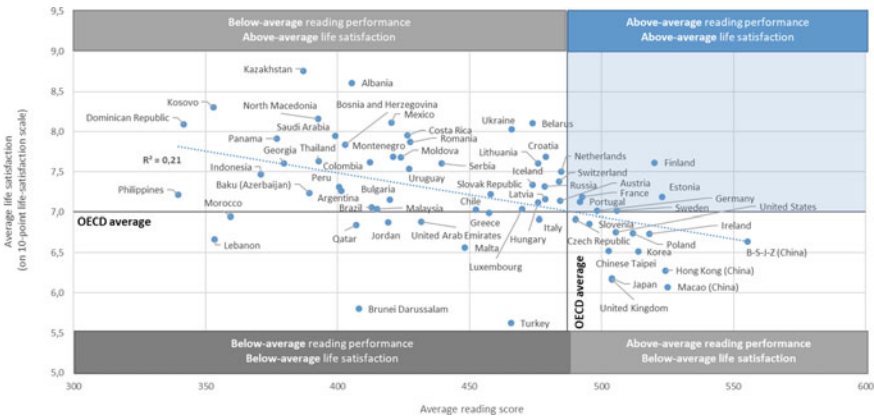


Fig. 6 Life satisfaction and reading performance across education systems (OECD 2019d)

to the experience of cooperation. In other words, working together and encouraging cooperation would increase the experience of cohesion and thus a more meaningful school for all. However, it seems that the happiness of our people, as found in other studies like The World Happiness Report (Helliwell et al. 2019) is also reflected in the lives of schoolchildren. We are knowledgeable and happy in our lives. This is a combination that must be one of the highest goals of all human life. It should be rejoiced.

4.2 Small Between-School Variation

The differences between Finnish school performance have always been small by international standards. The variation between Finnish schools was 7% of the total variation in reading proficiency. The previous represents the least variation among all the participating countries and economies, and it did not increase from the previous PISA survey. Disparities between schools did not increase, but differences in reading proficiency among students within individual schools were more substantial than ever in the history of Finland’s participation in PISA studies.

The differences in proficiency between sub-regions were not significant, but the location of the school seemed to be related to the level of competence. In the schools located in smaller and rural communities, the average scores were lower than in larger ones. What is noteworthy here, however, is that this phenomenon was only visible in the results of the boys, the results of the girls were at the same level regardless of the locality. The phenomenon was initially found in northern Sweden, but then also recognised at least throughout the Nordic countries. Known as the Jokkmokk effect, boys’ lives in the rural area contain values of nature and traditional occupations, which divert interest away from school (e.g. Ripley 2005). Often, the boys also

stay in their home towns. Instead, for girls, going to school often appears to be the only opportunity to pursue their endeavours. Studying also offers the opportunity to move away from home town. This finding suggests that such developments existed throughout Finland.

From the equality point of view, it is a negative result that the socio-economic background of the learner is still as strong as three years earlier when for the first time in the history of PISA, this correlation reached the OECD average (Vettenranta et al. 2016). Previously, the connection had been weaker in Finland than in the OECD countries on average. There has been no change in the gap between immigrant backgrounds and native pupils, and the gap remains the largest in Finland. Although the percentage of pupils with an immigrant background in the Finnish student population has increased slowly, it is still minimal, which is reflected in the small PISA sample size (5.8%) of them. Although there is thus much uncertainty about the results of pupils with an immigrant background, they are indisputably weaker than those of the native Finnish population. However, the result can be partly explained by language gaps and the socio-economic status of the families of immigrant pupils.

The sample of Swedish-speaking schools in Finland was also relatively small (approximately 7%), which makes it challenging to draw valid conclusions. When examining the materials of Swedish-speaking schools, the focus is on the better mathematics performance of the students studying there. The average score of students of Swedish-speaking schools in Finland was the best in the Nordic countries during the PISA 2018 round, and thus also better than those studying in Finnish-speaking schools. However, due to the small sample size, this difference was not statistically significant compared to students studying in Finnish-speaking schools and to Denmark and Sweden. It seems that, in Finnish-speaking schools, pupils' mathematics skills have systematically declined, and pupils in Swedish-speaking schools have maintained their standard. This is especially true for girls in Swedish-speaking schools, their mathematics score in this round was at the same level as in 2003, thus distinguishing themselves from Swedish-speaking boys and Finnish-speaking students on average.

In reading literacy, the difference between Finnish-speaking and Swedish-speaking schools was still significant and better for Finnish-speakers, although it has narrowed slightly from previous years. There has been a slightly steeper decline in the performance level of pupils in Finnish-speaking schools than in Swedish. The reading literacy performance of Swedish-speaking boys has continuously been alarmingly low. Their average score in all PISA studies has been below the OECD average, in every PISA cycle. In science, the gap has narrowed more than in reading: while in 2006, the difference was clear and significant for Finnish-speaking students, no significant difference was observed in 2015. The result was the same in 2018 as well.

5 Discussion

5.1 *Historical Improvement in Learning Outcomes*

Finnish students have received outstanding results in the PISA as well as PIRLS and TIMSS studies. Still, it is good to remember that Finland has not always been on the top of the international comparisons (Altinok et al. 2014). During two decades on the 1970s and 1980s Finnish students' achievement were rated below the global average and the step above the average was taken only as late as mid-1990s (Sahlberg 2011; Sahlgren 2015). By the end of the 1990s, the internal discussion and debate against the Finnish school system got more vigorous. There was a high demand for reforming the school system, claiming the present form was not producing good enough learning results (Simola et al. 2017). According to the many critical voices, the comprehensive schooling had a levelling effect, which gained more unsatisfactory results for all. When the results of the first PISA study appeared in 2001, the results were a genuine surprise for all in Finland. There were also some doubts about the study. Nevertheless, later it can be argued that the PISA study did save the Finnish comprehensive school system as the below citing from the second PISA national full report forewords show.

The outstanding success of Finnish students in PISA has been a great joy but at the same time a somewhat puzzling experience to all those responsible for and making decisions about education in Finland. At a single stroke, PISA has transformed our conceptions of the quality of the work done at our comprehensive school and of the foundations it has laid for Finland's future civilisation and development of knowledge. Traditionally, we have been used to thinking that the models for educational reforms have to be taken from abroad. This sudden change in role from a country following the example of others to one serving as a model for others reforming school has prompted us to recognise and think seriously about the special characteristics and strengths of our comprehensive school. (Väljjarvi et al. 2007)

The latest school reform in Finland was conducted in the mid-1970s. That reform's most significant change was the formation of comprehensive basic education. There was a switch from German tradition towards the Anglo-Saxon model, following especially Sweden. Before that, the students were divided on primary and grammar schools on early ages. Now Finland was the third nation to adopt a comprehensive school system after Sweden and DDR. The first curriculum for the Finnish comprehensive school was prepared carefully by the best expertise of that time, and the reform put into action gradually during the years 1972 and 1977. Shortly after the comprehensive school reform, new legislation for teacher qualifications was established. In 1979 Finland was a world's first nation to set a master's degree as a qualification for all teachers, also at the primary level of education. With that very same system, we are still operating at least through the decade of 2020. The national core curriculum for basic education in Finland has been renewed in approximately every ten years. During the existing history of PISA, there has been only one effective curriculum change in Finland, in the year 2004. The preceding core curriculum was from the year 1994, which gave the schools almost full independence to form their

local curriculum and teaching without any inspection and centralised control. The 2004 national core curriculum was a step towards more restrictive and centralised school policy but still without inspection or standardised testing.

The latest national core curriculum came to effect in the year 2016. The renewing process is split into two parts: a lesson frame and the actual curriculum. The lesson frame is subject to a parliamentary decision process. It is usually challenging to accomplish changes on it, and it did remain as such in the latest curriculum process. The number of lessons and subjects remained practically the same as previously. The curriculum renewal process is led by the National Agency of Education, conducted as office work, and it does need a political decision to come into action. In practice, the 2016 curriculum change did not have any effect on the 15-year-olds sitting the test in spring 2018, because it came into effect gradually.

5.2 Factors of the Declining Trend

The fall of Finland's proficiency since 2006 has been substantial, and it would be crucial to have a hint of the possible reasons behind that. Finland had not been alone on this declining trend, and the absolute fall in average proficiency is greater than the relative performance in comparison with other participating school systems. The average scores from the top year 2006 were so high that even after considerable absolute declines, Finland still ranks among the best of the OECD countries in Science and Reading. In mathematics, the drop in absolute proficiency has been substantial 41 points. Even though there has been a decline also in the other top-performing countries, Finland's performance drop is the greatest of all. Figure 6 shows that gap between this selected list of countries has narrowed along the years. When in the year 2003 PISA study the presented countries' mathematics proficiency varied from Poland's 490 average to Finland's 544, in 2018 study all these countries fit between 502 and 527 country averages. Figure 7 also presents that only in Poland the mathematics average has increased from the year 2003. Estonia has improved since its first participation in the year 2006 study.

Over the cycles, researchers have tried to examine the factors behind the decline, and it has become rather clear that the reasons cannot be found on the PISA data solely (Leino et al. 2019; Vettenranta et al. 2016; Välijärvi et al. 2007). Neither can they be located in the changes in schools, pedagogics or curriculum only. Simola (2014) and Simola et al. (2017) argues that the "Finnish miracle", especially referring on the top results on the first decade of twenty-first century, can be returned on the unique combination of firm beliefs in education, highly valued teacher profession and the pedagogical freedom of teachers without external inspections and testing. In his thorough monograph "Real Finnish Lessons", Sahlgren (2015) found that success is related to cultural and societal changes. Sahlgren (2015) also claims that the best results have been achieved based on the somewhat centralised schooling organisation rather than the de-centralised one. It is also evident that Finland's performance has been higher when the effect of the socio-economic background on students'

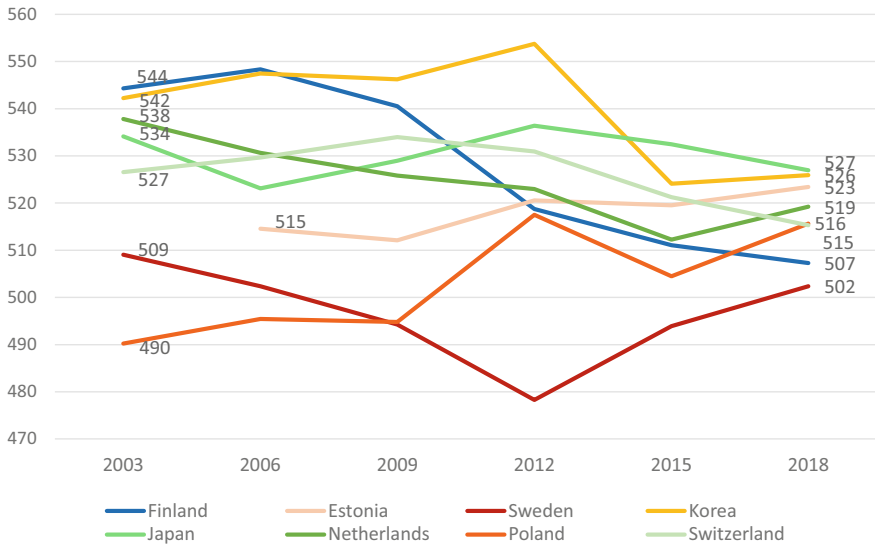


Fig. 7 Trends in PISA Mathematics

performance has been weaker, and along with the performance decline, the impact of the socio-economic gradient has grown stronger. However, we still have very little evidence to prove direct causal effects of Finland's performance trajectory. Still, it is essential to realise as Sahlgren (2015) notes: "Nothing happens overnight". Educational policy decisions and actions, if any, have far-reaching consequences, and the results can be recognised only by looking far enough in history.

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