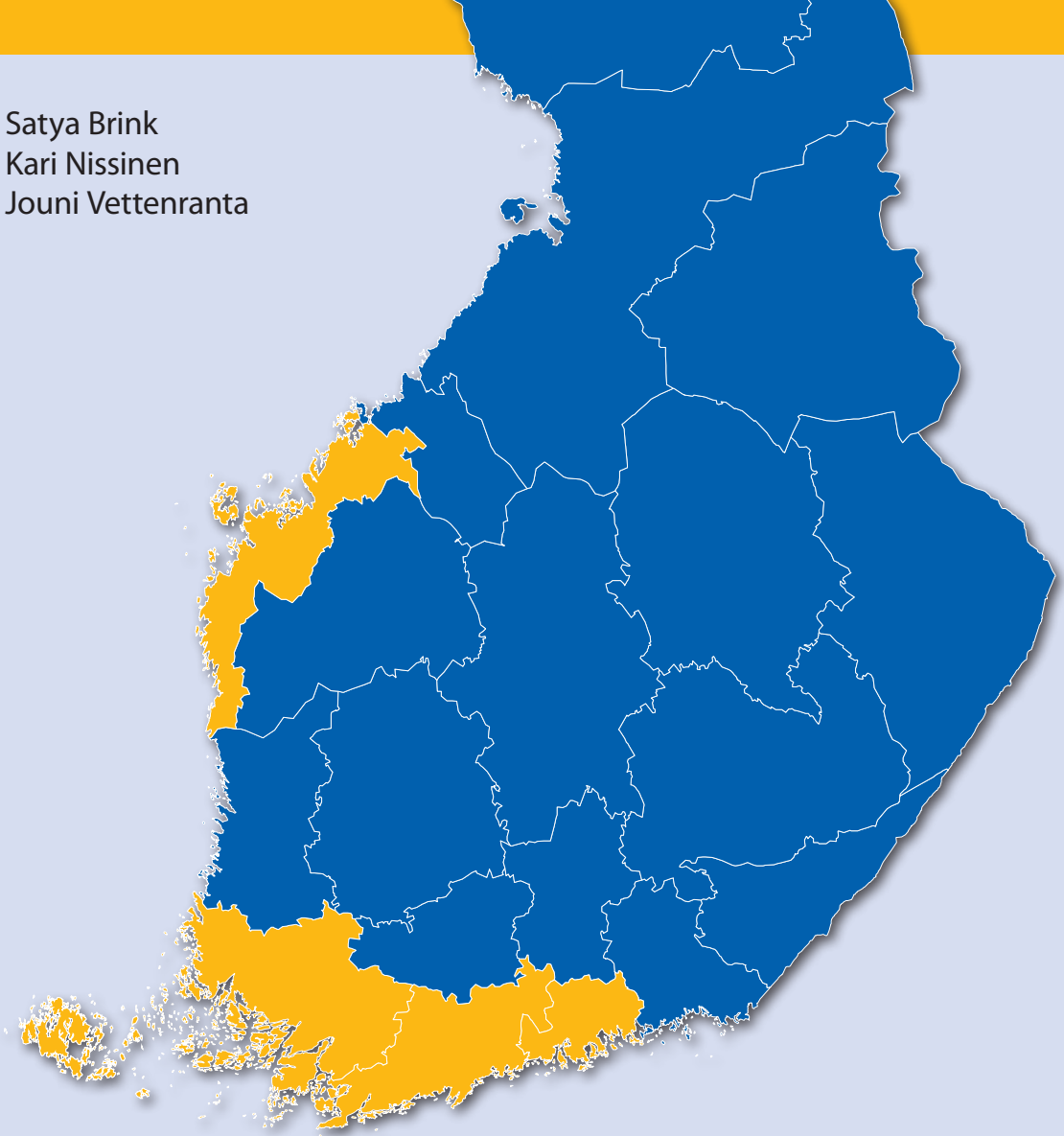


Satya Brink
Kari Nissinen
Jouni Vettenranta



Equity and excellence

Evidence for policy formulation to reduce the difference in PISA performance between Swedish speaking and Finnish speaking students in Finland



UNIVERSITY OF JYVÄSKYLÄ
FINNISH INSTITUTE FOR
EDUCATIONAL RESEARCH

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Finnish Institute for Educational Research
Reports 47

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THIS PUBLICATION
CAN BE OBTAINED FROM:
Finnish Institute for Educational Research
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P.O. Box 35
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Phone +358 40 805 4276
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www.ier-publications.fi

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The Finnish Education
Evaluation Council

In co-operation with The Finnish Education
Evaluation Council

Cover and graphic design: Martti Minkkinen
Layout: Kaija Mannström
Map template: CSC-IT Center for Science

ISSN-L 1456-5153
ISSN 1456-5153 (printed version)
ISSN 2243-139X (pdf)

ISBN 978-951-39-5275-4 (printed version)
ISBN 978-951-39-5276-1 (pdf)

Printed by University Printing House
Jyväskylä 2013

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EQUITY AND EXCELLENCE

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University of Jyväskylä
Finnish Institute for Educational Research
Reports 47

ISSN-L 1456-5153
ISSN 1456-5153 (printed version)
ISSN 2243-139X (pdf)
ISBN 978-951-39-5275-4 (printed version)
ISBN 978-951-39-5276-1 (pdf)

Abstract

Educational excellence and equity are widely recognized as important for national welfare, competitiveness and economic growth. According to PISA, the Finnish school system has consistently produced both excellent and highly equal school achievements. However, in reading literacy achievement a systematic difference in favour of the Finnish-speaking majority over the Swedish-speaking minority has been observed in all PISA surveys. In 2009, this difference fell slightly, but this was due to a decline in the performance of Finnish-speaking students, while that of the Swedish-speaking students remained practically unchanged. The increased equality was gained at the expense of excellence. As several countries have been able to significantly improve their results in PISA, Finland and Finnish schools can maintain their high international status only by keeping pace with the best performing countries.

The key objective of this report was to explore policy relevant factors that affect achievement in Finnish and Swedish schools in Finland. Utilizing the Finnish PISA data this research examined the factors explaining the difference in reading literacy achievement between the two language groups in Finland to determine if both universal and targeted policies were required. It also studied whether the explanatory factors stayed the same between 2000 to 2009 to examine the effectiveness of current policies.

The research found evidence to improve the performance of Swedish speaking students as well as that of the country as a whole and examined the implications for individual stu-

dents, schools and national policies. The joy of reading was the most powerful individual factor which must be fostered at home and at school. In schools, the elimination of teacher shortage, particularly of certified teachers in Swedish schools and the focus on control and self regulation learning strategies show promise. Since schools and regions are heterogeneous, customized solutions through school autonomy were considered more appropriate than standardized national approaches. A mix of universal as well as targeted national policies with a minimal increase in cost could result in improvements in excellence and equity for the country as a whole.

Keywords: reading literacy, PISA assessment, school system, Finland, school surveys, primary education, linguistic minorities

Brink, S., Nissinen, K. & Vettenranta, J. 2013
TASAPUOLISUUS JA KORKEATASOISUUS
Tutkimustietoa ruotsin- ja suomenkielisten oppilaiden
PISA-suorituserojen kaventamiseksi

Jyväskylän yliopisto
Koulutuksen tutkimuslaitos
Tutkimuslustoja 47

ISSN-L 1456-5153
ISSN 1456-5153 (nid.)
ISSN 2243-139X (pdf)
ISBN 978-951-39-5275-4 (nid.)
ISBN 978-951-39-5276-1 (pdf)

Tiivistelmä

Korkeatasoisella ja tasa-arvoisella koulutuksella katsotaan yleisesti olevan suuri merkitys kansakunnan hyvinvoinnille, talouskasvulle ja kilpailukyvyille. Kansainvälisten PISA-tutkimusten mukaan suomalainen koulujärjestelmä on kyennyt jatkuvasti tuottamaan korkeatasoisia ja tasa-arvoisia oppimistuloksia. Näissä tutkimuksissa on kuitenkin havaittu systemaattinen ero lukutaidossa suomenkielisen enemmistön ja ruotsinkielisen vähemmistön välillä, suomenkielisten eduksi. Kuluneena vuosikymmenenä ero on tosin hienoisesti pienentynyt, mutta tämä johtuu suomenkielisten oppilaiden suoritustason laskusta, kun ruotsinkielisten oppilaiden taso on pysynyt ennallaan. Tasa-arvon paraneminen on siis tapahtunut korkean tason kustannuksella. Kun useat maat ovat PISA-tulosten valossa kyenneet merkittävästikin parantamaan keskimääräisiä oppimistuloksiaan, Suomi voi säilyttää kansainvälisesti korkean asemansa vain pysymällä samassa tahdissa muiden kärkimaiden kanssa.

Tämän raportin tavoitteena on selvittää suomenkielisten ja ruotsinkielisten koulujen lukutaitotuloksiin vaikuttavia tekijöitä. Raportissa tarkastellaan PISA-tutkimusaineistojen avulla suomenkielisten ja ruotsinkielisten oppilaiden lukutaidon tasoa ja kieliryhmien välistä eroa selittäviä tekijöitä. Lisäksi selvitetään, ovatko selittävät tekijät pysyneet samoina vuodesta 2000 vuoteen 2009. Tavoitteena on arvioida suomalaisen peruskoulutusjärjestelmän tähänastista onnistumista sekä etsiä seikkoja, joihin koulutuksen kehittämisessä tulisi vastedes kiinnittää huomiota.

Tulosten perusteella löytyi seikkoja, joihin tulee kiinnittää huomiota haluttaessa parantaa suomalaisten ja erityisesti ruotsinkielisten oppilaiden lukutaitotuloksia. Koska tärkein yksittäinen oppilaan lukutaidon selittäjä oli oppilaan oma lukemisharrastus, oppilaita pitäisi kannustaa mahdollisimman aktiiviseen ja monipuoliseen lukemiseen niin kodeissa kuin kouluissakin. Lisäksi koulujen tulisi valmentaa oppilaat omaksumaan nykyistä paremmin hyödyllisimmiksi havaittuja lukemis- ja opiskelustrategioita. Erityisesti ruotsinkielisissä kouluissa vallitsevaa pätevien opettajien puutetta pitäisi voida pienentää. Koulujen ja alueiden välillä on kuitenkin selviä eroja, minkä vuoksi osaamistason nostamisessa tulisi yleisten kansallisten toimenpiteiden ohella etsiä myös alue- ja koulukohtaisia ratkaisuja. Suomalaiskoulujen kansainvälisesti verraten suuri autonomia antaa tähän hyviä mahdollisuuksia.

Asiasanat: lukutaito, PISA-tutkimus, Suomi, peruskoulu, suomenruotsalaiset, kielelliset vähemmistöt

Brink, S., Nissinen, K. & Vettenranta, J. 2013

JÄMLIKHET OCH RESULTAT

Forskningsresultat som kan användas för att minska skillnaderna i PISA-prestationer mellan svenskspråkiga och finskspråkiga elever

Jyväskylä universitet
Pedagogiska forskningsinstitutet
Rapport 47

ISSN-L 1456-5153

ISSN 1456-5153 (häft.)

ISSN 2243-139X (pdf)

ISBN 978-951-39-5275-4 (häft.)

ISBN 978-951-39-5276-1 (pdf)

Sammandrag

Jämlikhet och utmärkta resultat inom utbildningen anses allmänt ha betydelse för såväl nationens välfärd som konkurrenskraft och ekonomiska tillväxt. Enligt PISA-undersökningarna har det finländska utbildningssystemet fortlöpande förmått producera excellenta och jämlika resultat. I alla undersökningar kan man dock observera en systematisk skillnad i läsförståelse till de finskspråkiga elevernas fördel i jämförelse med de svenskspråkiga. År 2009 var skillnaden något mindre, men berodde på att de finskspråkiga elevernas prestationer sjönk medan de svenskspråkigas förblev oförändrade. Ökad jämlikhet har således uppnåtts på bekostnad av excellens. Eftersom många länder har förbättrat sina resultat i PISA avsevärt, kan Finland och de finländska skolorna bevara sin höga internationella ställning endast genom att förbättra sina resultat i samma takt som de övriga högpresterande länderna.

Det centrala syftet med den här rapporten var att undersöka vilka faktorer som inverkar på de svensk- och finskspråkiga skolornas resultat. Med hjälp av PISA-data granskades faktorer som förklarar skillnaden i läsprestation mellan de två språkgrupperna för att kunna avgöra om det behövs både allmänna och riktade åtgärder för att avhjälpa skillnaden. Dessutom granskades data i syfte att utreda hur effektiva de nuvarande åtgärderna är om de förklarande faktorerna var desamma åren 2000 och 2009.

De resultat studien gav kan utnyttjas för att förbättra de svenskspråkiga elevernas prestation, men även för en förbättring på nationell nivå. I studien analyserades vad detta

innebär för elever, skolor och nationella åtgärder. Den starkaste individuella faktorn var läsglädje för vilket eleverna bör få uppmuntran och stimulans både i hemmet och i skolan. För skolorna är åtgärder för att avhjälpa lärarbristen, i synnerhet bristen på behöriga lärare i svenskspråkiga skolor, fokus på kontrollstrategier samt självreglerande lärandestrategier värda att satsa på. Eftersom skolorna och regionerna är heterogena ansågs skraddarsydda lösningar i stöd av skolornas autonomi mer lämpade än standardiserade nationella insatser. En kombination av allmänna och riktade nationella åtgärder kunde med en minimal höjning av kostnaderna resultera i förbättrad excellens och jämlikhet för hela landet.

Nyckelord: läsförståelse, PISA-undersökning, grundläggande utbildning, finlandssvenskar, språkliga minoriteter, grundskolan

Foreword

The present publication is a result of the productive cooperation between Canadian and Finnish researchers. Under the lead of Dr. Satya Brink, a distinguished Canadian expert in educational policy research, the team of authors focus on the special characteristics of Swedish-speaking education in Finland and search for explanations for the differences between Finnish- and Swedish-speaking students' performance in PISA assessments. This report supplements and adds depth to earlier national analyses, through external viewpoints. On the other hand, Satya Brink's strong connections to the Nordic countries together with the contribution of the two Finnish researchers guarantee that the findings of this report are based on an extensive understanding of the Nordic comprehensive school.

The findings highlight a number of essential strengths in Finnish basic education, where the common denominator is equity in education. At the same time, the report also explores several key factors contributing to differences in learning outcomes both at individual and community level. The parallel Swedish-speaking and Finnish-speaking basic education sectors in Finland operate in somewhat different social, regional and language-policy contexts, and this aspect is analysed thoroughly in the report.

This publication can be used as a concise guide of the Finnish school system. Moreover, it outlines the means by which Finnish basic education has achieved its high standard. The versatile international experience of the team of authors helps them interpret the results and relevant underlying factors also in a wider international context.

Within the team, Dr. Satya Brink led the project and wrote the text. University researcher Kari Nissinen (FIER) carried out the statistical analyses and chose the methods according to the research questions and also contributed to the editing process. University researcher Jouni Vettenranta (FIER) was responsible for the maps and related analyses, in particular.

This publication is an integral part of The Finnish Education Evaluation Council reviews on Swedish-speaking education in Finland. The report is published by the Finnish Institute for Educational Research in collaboration with The Finnish Education Evaluation Council.

Professor Jouni Välijärvi,
Director of The Finnish Institute for Educational Research (FIER)

Introduction

Public compulsory education in most developed countries, and certainly in Finland, is intended to give every child the knowledge and skills to access future learning and opportunities. It is the primary public policy to ensure inclusion, equality, economic growth and informed citizenship for nation building. This educational advantage rendered to citizens through such a policy is expected to be fair and equal. But this over-focus on equality overshadows the goal of excellence because equity can be achieved at a lower average level of performance, resulting in fairness between the linguistic majority and minority but not the demands for excellence which is a prerequisite for equal opportunities for individuals and advantageous economic growth for the country.

Laws to protect language minorities generally focus on equality of treatment in education. Monitoring results are based on indicators such as PISA¹ performance. Excellence is rarely considered. This sets the bar too low because equity can be achieved at a lower standard of performance. For instance, if Finland stated that both Finnish and Swedish speaking students' achievement should exceed the OECD average of 500 PISA points, the legal requirement would already be met. While this would meet the moral drivers for equity, the growth and progress demands for excellence are not equally met for both the majority and the language minority.

¹ OECD Programme for International Student Assessment (PISA) which measures performance of 15 year olds in reading, math and science every three years since 2000.

Excellence is essential for economic growth and competitiveness. The OECD has shown that the long term returns in GDP growth for OECD countries is around 3% if PISA scores can be increased by 25 points through reform by 2030. By the end of expected life in 2090 for the person born in 2010, GDP per capita would be expected to be about 25% above the “education as usual” level (OECD, 2010e).

Could Finland achieve both excellence and equality goals in the coming decade? In the case of Finland, an increase by 25 points would require an average score of 561 in reading, which is higher than the average score of 556 achieved by top scoring Shanghai in 2009. Poland increased its average reading score by 29 points between 2000 and 2006 through reforms. This goal is certainly within reach.

The current gap between the Finnish speaking students (PISA reading score 538) and Swedish speaking students (PISA reading score 511) is 27 PISA points in reading, about 9 months of a school year (Harju-Luukkainen & Nissinen, 2011). The equity goal would require Swedish speaking students to perform as well as the Finnish speaking students. But meeting a global standard of excellence would mean that both Finnish and Swedish speaking students should surpass (561) or at least equal the average score of Shanghai (556). This would require Finnish students to overcome a lag of 18 points about six months of a school year which would certainly be easier than to improve Swedish speaking student performance by 45 points, which is equivalent to more than a school year.

However, it would be both a moral and economic issue if such an improvements to a global standard in performance were achieved solely by improving the scores of the Finnish speaking student majority, because the inequity between the Finnish speaking and Swedish speaking students would be worsened, leaving the latter with an educational disadvantage. In other words, neither the equity nor the excellence goals would be achieved in reality.

The Finnish education system would benefit from a review. This report, therefore, is intended to provide some evidence for policy formulation for both equity and excellence in educational outcomes for Finland.

Educational disadvantage and its consequences

Educational disadvantage is where children benefit less from compulsory education than others and do not reach their potential. The disadvantaged individual will contribute less than those with higher performance and will be at higher risk in the labour market and in society. Canadian longitudinal research has shown that long term effects include: the lower probability of enrolling in post secondary education, a delayed pathway to post secondary education, the choice of less remunerative subjects in post secondary education, lower earnings, higher unemployment rates and greater literacy loss with age (Brink, 2012). Human talent is wasted if children do not reach their potential. This results in diminished human capital of the country and its ability to compete in the global context.

The consequences are major and long term for the individual and the country.

- Individual: Any additional investment in the 9 years of compulsory schooling amply increases the capacity of the individual to contribute more for the next 60 years, if a life expectancy of 80 years is assumed.
- Regional: If low performing minorities are concentrated in some parts of the country, it could result in long term and even generationally depressed areas, causing a drag on the economy.

- National: The waste of human capital bites two ways: in diminished tax revenues and contributions to GDP but also in increased use of public programs (unemployment support, for example) by those disadvantaged resulting in higher costs over the post-school years.

The public policy response can be weak or forceful depending on the assessment of the issue and the priority assigned. Because Finland is a high performing PISA country, the gap between the greater proportion of Finnish speaking students and the fewer Swedish speaking students could be tolerated if the bar is set low and the educational system performance is considered high. However, if the discussion shifts to potential rates of improvement in performance to be a global leader, then the educational system comes under greater scrutiny. Finland would have to consider whether its position as a high performing country can be maintained without improving its performance at a rate that keeps pace with the best performing countries. For instance, Korea and Hong Kong had lower performance in 2000 but had caught up to Finland by 2009 (OECD, 2010b).

What is the risk that the policy response would be weak rather than determined in Finland? There are some persuasive arguments for inaction. Finland is already a high performing country with a fairly equitable distribution. The gap between the Finnish and Swedish speaking students fell from 35 to 27 PISA points in reading between 2000 and 2009. There is a reluctance politically to invest in minorities when there are universal policies such as comprehensive education resulting in high overall performance. The Swedish speaking population composes 5.5% of the population. So, investing “so much for so few” could be barrier though it is a fallacy.

It should be noted that the Swedish speaking students made no real gains over the last decade so it is a lingering problem (Figure 1). Though the difference in PISA reading scores between Swedish and Finnish speaking schools dropped from 35 points in 2000 to 27 by 2009 this was because the performance of Finnish speaking schools dropped by ten points. The score of the Swedish speaking schools did not change. Since the score for Finnish speaking students fell over the nine years, it would have been a time when the Swedish speaking students could have more easily narrowed the gap but this did not happen. In essence, this was a loss in both equity and excellence as well as potentially a growth in educational disadvantage.

The existence of educational disadvantage in a public education system which is a widely applied successful universal policy, is a difficult policy conundrum. In general, since public compulsory education is the primary policy for leveling the playing field by attenuating the grip of class and social status, it has the following objectives: first, each child has equal access to benefit from public compulsory education; second, such education should support the child to reach his or her full potential; and third, public compulsory education

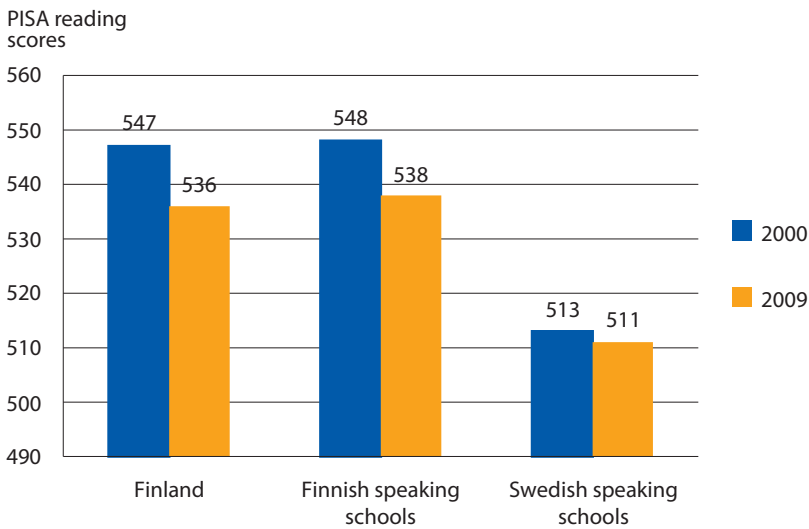


Figure 1. PISA reading scores for Finnish and Swedish speaking schools, 2000 and 2009

is the primary means for social inclusion and laddering up of those disadvantaged due to circumstances beyond their control. Like market failure, some have termed the less than desirable equity and excellence results an educational system failure.

If indeed, Swedish speaking students are less able to benefit from public compulsory education, then, educational disadvantage can have increased pernicious effects under two further conditions, assuming that equity would be achieved not just by similar average scores but also by similar distributions of performance. Generally, PISA level 3 and above or over 480 points is considered desirable. The two further conditions are the depth of the disadvantage and the concentration of the disadvantage.

Depth of disadvantage

If the depth is great, then the corrective strategy will be more complex, take more time and cost more. PISA proficiency levels² and the skills related to each level can be used for policy and practice responses. For instance, if the reason for the difference in average performance is because there are a greater proportion of Swedish speaking students at level 1 and 2 when compared to Finnish speaking students, the strategy will have to cover the

² PISA performance was measured in 7 levels. See Appendix 2 for the levels, scores and skills for each level. Scores in proficiency levels 3 or higher (480 score points or above) are considered desirable.

mastery of skills at these lower levels in order to move students to level 3. It would take longer to move students from level 1 to level 3 than from level 2. Often, the diversity of issues among students performing at level 1 are greater, and will require more personalized solutions and therefore, the response could be complex.

Concentration of disadvantage

Educational disadvantage can affect any child and can exist in any school. However, the effects of disadvantage are magnified if there is concentration among groups, schools or regions. If disadvantage is concentrated among groups, that group would require considerable resources to exit this situation and if the condition of disadvantage persists, the group itself can experience a downward spiral, increasing demands on the public purse at a rate greater than for the population as a whole. If educational disadvantage is concentrated in schools, they would be hard pressed without assistance to increase their rate of improvement to catch up with the national average. When disadvantage is concentrated in a region, decision makers realize that the consequences will be long term for the population and that neglect can result in loss of the more talented population and in further economic decline of the region.

However, these conditions may not be due to the failure of the universal policy, but rather because these policies may have different effects on Swedish speaking students than on Finnish speaking students of the language majority. This could be because the key factors may be different for Finnish speaking and Swedish speaking students or because similar factors may have differential effects. Figure 1 showed that the PISA reading score fell for Finnish students while it remained the same for Swedish students. This could be an indication that the policies have a differential effect for Finnish speaking and Swedish speaking students or that the current policies are losing their potency for the challenges of the day.

Research questions

The issues discussed above give rise to the following research question.

Research question 1: Are factors affecting the reading performance of Finnish and Swedish students the same?

Are the factors that affect reading performance of Swedish and Finnish speaking students the same and do they have the same level of effect, or are they different, resulting in greater depth and concentration of disadvantage?

It is well known that educational disadvantage is multidimensional, based on factors at home, school and community. Policies could be focused, twinned or packaged targeting these factors. If Finland has successfully applied policies to these factors that continue to improve performance generally and to improve the performance of the Swedish minority in particular, there would be a positive change in these factors over time. This improvement can now be captured by comparing PISA 2000 with PISA 2009 when reading was the main domain. If there are no changes in performance it could be that little was done, or that efforts did not bear fruit. Additionally, it would be important to look at the differences in the variables that have positive effects for Swedish speaking children compared

to Finnish speaking children, and to recommend targeting those. On the other hand, if there have been some positive changes to some key variables, then there was partial success. There may be greater future impact if now a shift is made to target other important variables to get better results. On the basis of these points, the second research question was formulated.

Research question 2: Have factors affecting reading performance changed over time?

If the factors affecting the differences in Finnish and Swedish performance are identified, have they remained the same over the past decade or have they changed?

Literature review and synthesis of previous findings

This review focuses on examining potential factors associated with equity and excellence which are supportive of the aim of basic education in Finland, which is “to support pupils’ growth into humanity and into ethically responsible members of society and to provide them with knowledge and skills needed in life” (Ministry of Education and Culture, 2012).

Overall PISA performance in reading

Despite high performance for most students in PISA 2000, 7% of Finnish speaking students and 12% of Swedish speaking students were at a level of reading performance (below level 2) which was not sufficient for either further study or active citizenship (Linnakylä et al., 2004). In 2009, the proportion of Swedish speaking students who performed at level 2 or lower was 25% (Harju-Luukkainen & Nissinen, 2011)

In high performing countries there were fewer students at the lower levels of performance in reading and more students in the higher levels of performance. It is generally accepted that a level 3 performance or higher would be desirable for future education, labour market success and participatory citizenship. Figure 2 shows the distribution of perform-

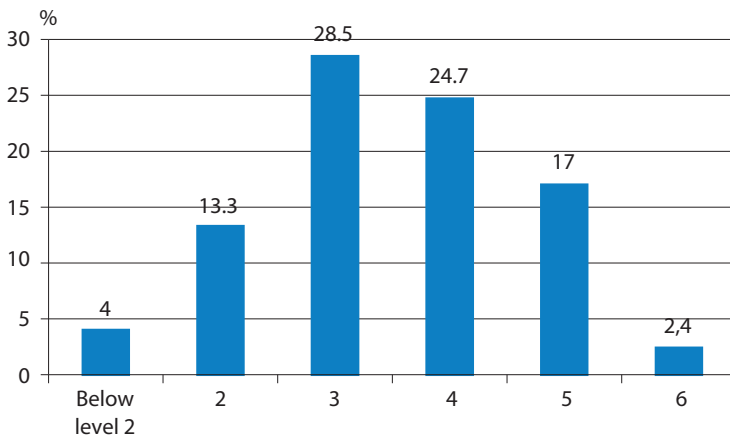


Figure 2. Reading performance distribution of Shanghai. High performing countries have more students in levels 5 and 6 than levels 2 and below, PISA 2009

ance by level for Shanghai (the top performer in PISA 2009) where there were only 17.3% of children in level 2 or below and about 19.4% in levels 5 and 6 in Shanghai in 2009.

The PISA scale is based on a hierarchy of reading skills, and the scores show that Swedish speaking students scored 512 while Finnish students scored 537 for the higher order skill of reflecting and evaluating. Swedish speaking students were also weaker at handling non-continuous texts where they scored 508 compared to Finnish speaking students who scored 537 (OECD, 2010d)

Finland had a large gender difference in reading performance. While girls scored 563, boys scored 508 in reading. This substantial difference of 55 points is well over a year of schooling (OECD, 2010d). According to unadjudicated PISA data the performance of Finnish speaking boys was 510 compared to Swedish speaking boys who scored 484 points. Finnish speaking girls scored 563 compared to Swedish speaking girls who had 536 points. The difference between the scores in both cases was similar to the national gender difference, though the range of the scores was substantially different. (OECD, 2010d). Gender was one of the key factors that emerged in earlier analyses as well, along with socio-cultural and personal factors (attitudes and activities) (Linnakylä et al., 2004).

In Finland 8.5% of students were top performers (Levels 5 and 6) in reading, math and science, (6.4% of boys and 10.6% of girls) compared to the OECD average of 4.1%. About half of students across OECD countries, who were top performers in reading, were also top performers in math and science, while in Finland, 58.8% of top-performing students in reading also excelled in math and science. By comparison, 75.2% of Shanghai students did so. Among Finnish speaking students 8.8% were top performers in all three domains,

but only 4.9 of Swedish speaking students were. There was no difference in the proportion of top performers in reading who also excelled in math and science (OECD, 2010d).

Factors associated with performance

According to the OECD while there is a correlation between GDP per capita and average reading performance, it only explained 6% of the performance across countries. The reading performance was adjusted based on several socioeconomic factors, but the score for Finland did not change when corrected for GDP per capita, cumulative expenditure per student, proportion of students with immigrant backgrounds or the size of the 15 year old population. Finland's score of 536, however, fell to 518 when adjusted for GDP per capita and proportion of 35 to 44 year olds with tertiary education, and to 523 when adjusted for the share of students whose index of economic, social and cultural status is below -1 (OECD, 2010d).

Home background is associated with reading performance and schooling seems to reinforce these effects. On average 14% of reading performance in OECD countries is explained by differences in socio-economic background but in Finland only 8% was. Still while 8% of the variation was explained for Finnish speaking students, 10% was explained for Swedish speaking students. Students in the bottom quarter of the index of economic, social and cultural index scored 504 while the students in the highest quarter scored 565. There was a greater difference for Swedish speaking students (35.6) than Finnish speaking students (31.5, about nine months of a school year) for each unit change of the index. Regardless of their own socioeconomic background, students attending school with an advantaged socioeconomic background perform better. Resilient students come from the lowest quarter of socioeconomic background in their own country but score in the highest quarter of performance of students of all countries with a similar background. In Finland 11.4% of students were resilient. This proportion was 18.9% in Shanghai (OECD, 2010c).

About half of advantaged students in Finland attended schools with favourable characteristics while slightly less than half of disadvantaged students attended schools with a low school index of economic, social and cultural status (ESCS). The variation in reading performance within schools for Finland was ten times as high as the variation between schools but when disaggregated the variation within schools was 11 times greater for Finnish speaking schools and 14 times higher for Swedish speaking schools. For each unit of the student's index of economic, social and cultural status in the within school variance, there was a 28 point difference in the PISA score and in the between school variance, there was a 19 point difference in the score (OECD, 2010c).

Among school factors, in Finland, the factors that were statistically significant in their correlation relationship to reading performance were percentage of full time teachers (0.17), Index of school responsibility for resource allocation (0.23) and school size (0.31) (OECD, 2010c). The urban or rural school location did not appear to be related to Finnish performance. However, students attending city or large city schools³ scored 18 points more than students in rural schools. But in Swedish speaking schools, there were 24 points difference between town and rural schools and 37 points between city and large city schools and rural schools. This difference of 37 points is about a lag of a school year (OECD 2010c). Swedish speaking schools appear to be disadvantaged in relation to Finnish speaking schools as seen by the following correlations with the school index of economic, social and cultural status which were small but significant: Index of teacher shortage: -0.21, percentage of full time teachers: -0.20 (Finnish schools: 0.21), percentage of certified teachers among full time teachers: -0.06, percentage of teachers with university degrees among full time teachers: -0.06, index of school responsibility for resource allocation: 0.17 (Finnish speaking schools: 0.25), index of curriculum responsibility: -0.18, index of quality of schools educational resources: 0.06 and school size: 0.13 (Finnish schools: 0.36) (OECD 2010c)

Score point differences associated with student related factors in Finland were: 0.7 points with highest occupational status of parents, 2.9 points with highest level of parents education, 13.6 points with index of cultural possessions, 13.6 points with number of books at home, -13.3 points with wealth, -11.8 with single parent family, -36.3 with first generation student and -41.2 points with primary language spoken at home different from language of assessment. About 19% of the variance in scores was explained by student factors, with the factor explaining the most among these being index of cultural possessions (OECD, 2010c).

Analysis by the OECD (2010a) illustrated the interrelationships between individual and learning related factors which affected reading performance and the coefficients for them (Figure 3). Both direct and indirect effects were shown.

National analysis in Finland has identified engagement in reading activities and learning strategies as well, while confirming that around 10% of the variation for Swedish speaking students is explained by socioeconomic status (Table 1). The analysis compared results for Finnish speaking schools with the results for Swedish speaking schools (Harju-Luukkainen & Nissinen, 2011). These variables explained 50% of the variation. What is interesting is that students in Finnish speaking schools lie slightly over the OECD average for the top three explanatory variables while the Swedish speaking students lie below it

³ In PISA a city refers to students attending schools located in a city of 100,000 to 1,000,000 people and a large city refers to students attending schools located in a large city with over 1,000,000 people.

for the same ones. This is further indication that there are differences between Finnish and Swedish speaking students.

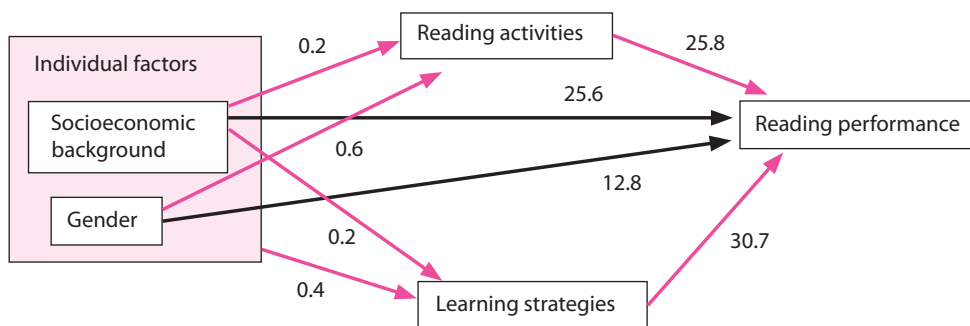


Figure 3. Strength of association of individual factors and learning related factors to PISA reading performance (OECD, 2010a, p. 88)

Table 1. Factors explaining PISA reading performance in Finnish and Swedish speaking schools (Harju-Luukkainen & Nissinen, 2011, p. 47)

Factor	Finnish speaking schools		Swedish speaking schools	
	Average	% explained	Average	% explained
Joy of reading	0.06	27	-0.10	29
Summarizing strategies	0.10	23	-0.11	26
Understanding and remembering	0.05	17	-0.30	18
Diversity of reading materials	0.46	14	0.35	15
Control strategies	-0.33	8	-0.50	10
Socioeconomic background ESCS ¹	0.29	8	0.52	10
Elaboration strategies	-0.14	2	-0.31	2
Reading activities on the internet	-0.03	2	-0.17	3

¹ PISA indices were created to have an OECD average of zero and a standard deviation of one. Examples of indices are ESCS and cultural possessions.

The Swedish speaking minority and the education system of Finland for Finnish and Swedish speaking students

To better interpret data analysis and to provide more nuanced policy suggestions, it is important to understand the context of the Swedish minority and some basic descriptions of the education system of Finland.

Swedish minority

According to Statistics Finland, the population of Finland is about 5.5m people, with a low average population density of 17 persons per Km². Approximately 64% of the population lives in densely populated areas. Metropolitan Helsinki accounts for a fifth of the population.

Swedish is the mother tongue of about 290 000 people in mainland Finland and of about 25 000 people in Åland, a self-governing archipelago of islands off the coast of Finland where Swedish speakers constitute a majority. Swedish-speakers form about 5.5% of the total Finnish population. Though the proportion has been steadily declining since the early 19 century when there was a peak of 15%, the current proportion has stabilized (Figure 4).

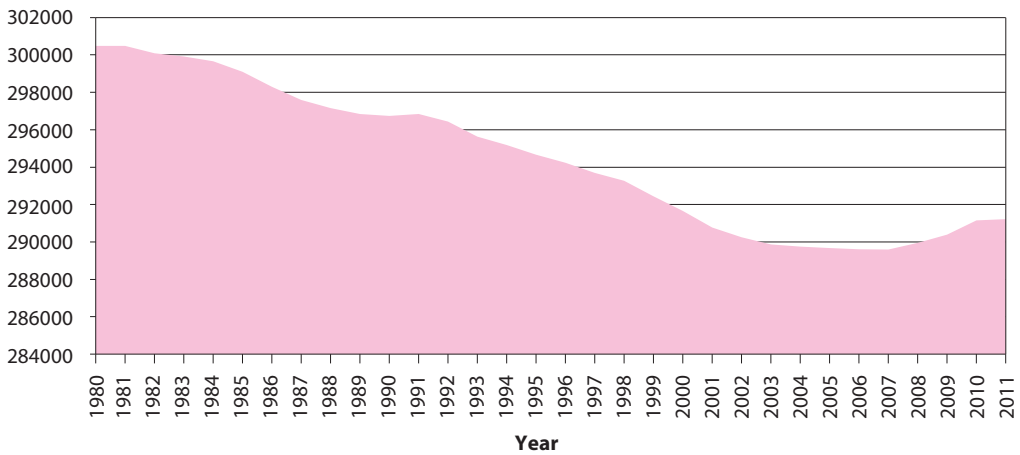


Figure 4. Swedish speaking population, Finland, 1980–2011 (Official Statistics of Finland, 2011)

The Language Act of 2003 regulates the language status of municipalities. If the language minority increased to at least 3 000 persons or 8% of inhabitants, then the municipality must become bilingual. But, if the minority fell below 3 000 persons or 8% of inhabitants, then the municipality must become monolingual with the language of the majority unless the municipality opts to maintain its bilingual status. So far only one municipality, Lohja, has done so. In order to track changes in population growth and composition, the status is reviewed once a decade and the status enacted by government with the decree issued by the Finnish Council of State.

Currently, 9% live in Åland (a self governing Swedish region in the archipelago), 6% live in officially monolingual Swedish speaking municipalities of Korsnäs, Narpes and Larsmo, 35% live in officially bilingual municipalities where Swedish dominates, 44% live in officially bilingual municipalities where Finnish dominates, and 6% live in officially monolingual Finnish municipalities. There are 292 unilingual Finnish municipalities and 19 unilingual Swedish municipalities. Bilingual municipalities where Finnish dominates numbered 18 and there were 13 bilingual municipalities where Swedish dominates.

Figure 5 shows the location of municipalities by their linguistic status. Thus, Swedish minorities have some areas of concentration and some areas of dispersion, which will have implications for the provision of schools. In addition, municipalities vary in the percentage of the Swedish population. Espoo, a bilingual area where Finnish predominates has 8% while Nykarleby in the bilingual area where Swedish dominates has 88% Swedish speakers. (Appendix 3.)

The Swedish speaking minority and the education system of Finland for Finnish and Swedish speaking students

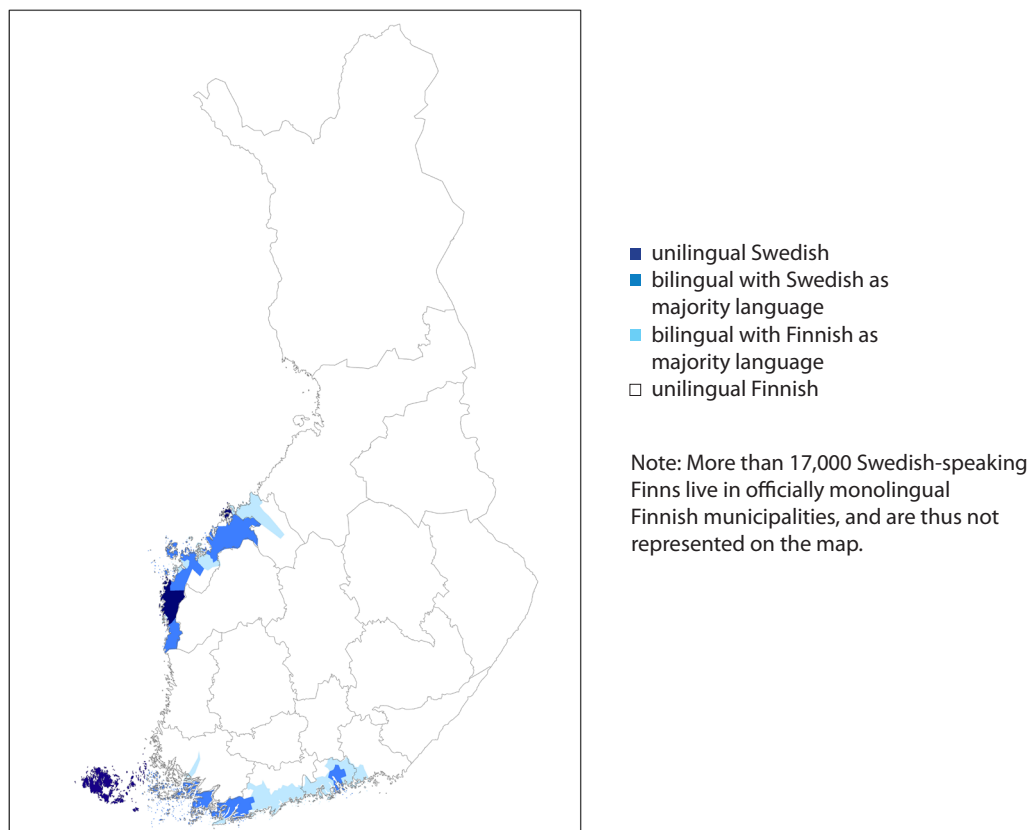


Figure 5. Location of the Swedish-speaking and bilingual cities and municipalities of Finland

Legal protection of the Swedish minority

Under Section 17, Right to one's language and culture in the Finnish Constitution (2000) both Finnish and Swedish are official national languages. According to the Language Act of 2004, the national government as well as municipal governments in bilingual municipalities are required to provide for the educational, cultural and societal needs of citizens, in their mother tongue, either Finnish or Swedish on an equal basis.

The primary language in which subjects are taught depends upon the pupil's mother tongue. This language of instruction is officially and in general practice called the *mother tongue* (*modersmål* in Swedish, *äidinkieli* in Finnish). The secondary language, as a school subject, is called the *other domestic language* (*andra inhemska språket* in Swedish, *toinen kotimainen kieli* in Finnish). Lessons in the "other domestic language" are a part of the curriculum in all secondary education.

A series of school policy decisions have been taken to ensure that Swedish education is available to Swedish speaking children and that Swedish is maintained as one of the two official national languages but most are universal policies (Figure 6).

1960s	1968 Basic Education Act
1970s	1970 Framework curriculum
	1972 Basic school reform of 9 year compulsory education for all
	1973 Day Care Act
	1972 Teacher Education Act
1980s	1985 Framework curriculum
	1985 Streaming abolished
	1986–1991 Decentralization
1990s	1992 Finland signed European Charter for Minority languages
	1994 Framework curriculum
	1991–1999 Polytechnics reform
	1998 Basic Education Act; Comprehensive school reform
2000s	2004 Framework curriculum
P	2005 Swedish National Test not compulsory
I	2006 Report to Parliament, application of Language Act
S	2009 32 Municipal mergers
A	2009 Report to Parliament, application of Language Act
2010s	2007–2010 Project: National languages; Position of the Second National Language

Figure 6. Policy trajectory in Finland, affecting Swedish minority education (Brink, 2012)

Funding of education

Education is funded almost entirely with public funds. According to Statistics Finland in 2010, 4,120m Euro was spent on Comprehensive school education which amounted to 35.7% of the education budget (Appendix 5). Instruction expenditures were two thirds of total costs.

The right to free basic education is publicly steered and supervised by the Ministry of Education and Culture. It develops and approves national guidelines for curricula and qualifications and assesses the comprehensive school system.

The municipalities or local authorities have self government and the right to levy taxes and they have a prominent role in the provision of education. The responsibility for edu-

education provision, construction and financing, is shared between the State and municipalities. Most comprehensive schools are maintained and operated by municipalities or by federations of municipalities and only about 3% of the schools are privately run, though they also receive public funding. Schools receive their budgets from the municipalities and teachers salaries are paid by the school.

In 2010, the average cost per student was 7 236 Euro, however the costs to school providers can vary significantly (Appendix 7). The actual costs per student varied from 10 352 Euro in Kaskö to 6 125 Euro in Kyrkslätt (Finnish National Board of Education, 2012a). According to the Finnish National Board of Education (2012b) education costs are higher in the north and east.

Capacity of municipalities to operate and finance education

Municipalities have responsibilities to operate schools according to the Basic Education Act, which includes a crucial role in reforming curricula and managing the schools.

The capacity of municipalities to finance education will be affected by the demand for education and their economy and revenue, as well as the support received from the state. For preschool, primary and secondary education, overall on average 43% of revenues come from municipal taxes and 57% is paid by the national government. In addition, municipalities provide other public services such as health and social services which compete for funds.

The population size which would determine the demand for school varied from a high of 1 549 913 in densely populated Uusimaa, which experienced some population growth compared to the small region of Kainuu which had a population of 81 298 and experienced a slight population decline. Uusimaa generated 171 869m Euro in GDP and GDP per capita that was well over the average of the country (136, indexed to the national GDP per capita=100) Kainuu on the other hand, had a GDP of 1 828m Euro and had a GDP per capita well below the national GDP per capita (68, indexed to the national GDP per capita=100) (Official Statistics Finland, 2012; see also Appendix 4). The state compensates poorer municipalities in order to maintain equality of services. The municipalities vary in their provision of Swedish speaking schools.

The capacity to raise revenues through taxation is affected by both population and the economic activity in the municipality. Municipalities levy a flat income tax between 16% and 22%. They also levy a low property tax. In addition, they also receive funding from the state (Valtionapu).

Municipalities also have to consider whether the student demand will rise or fall in the coming years, in order to invest or disinvest in school infrastructure. While some municipalities can expect growth others project a fall in the number of students (cf. Figure

7 for Finnish regions). However, smaller bilingual municipalities will still have to accommodate the Swedish student population, and this may mean either small schools or amalgamated provision with other adjacent municipalities.

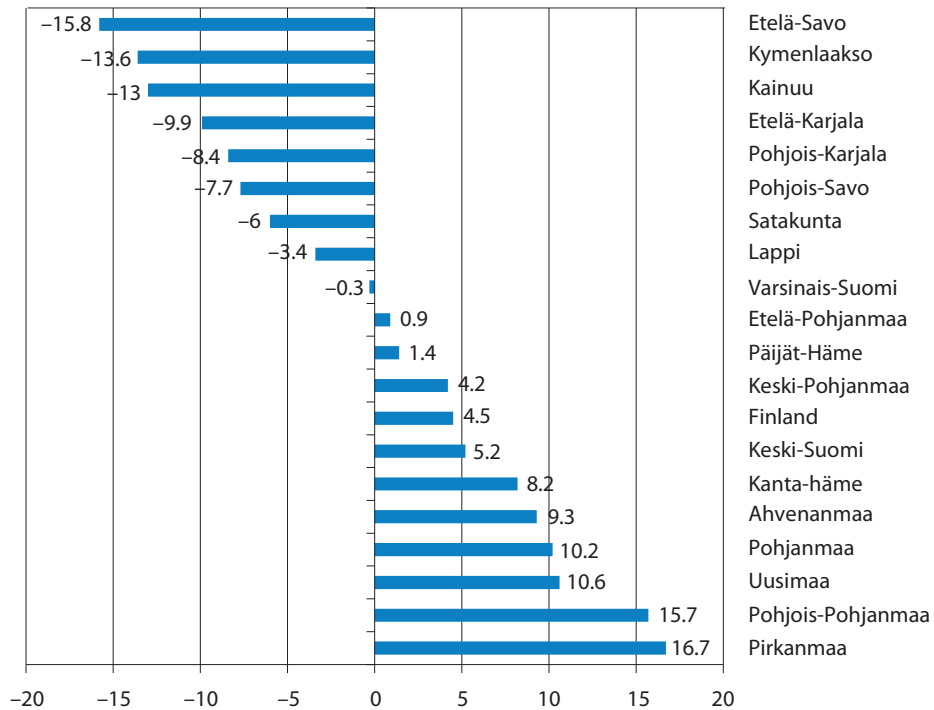


Figure 7. Changes in student demand for basic education (%) in Finnish regions, 2008–2025 (Finnish National Board of Education, 2012b)

Financing of schools

More economically advanced and populous municipalities are able to raise more revenue for schooling and social programs than less economically developed municipalities. So the state which collects municipal taxes on behalf of the municipalities redistributes the revenue to equalize the differences. The municipalities that have above-average income levels retain 60% of the revenues above the average and the remaining 40% is reallocated to lower income municipalities which are guaranteed at least 90% of the national average. The state also recognizes additional costs for municipalities, providing additional funds for teaching in Swedish, and for populations with a high proportion of immigrants.

Despite these attempts to even out costs and expenditures for education for municipalities, they spend widely varying amounts per student in schools. Such variation could be due to location and size (small rural schools), mix and quality of educational programs and provision and efficiency of resource use. In essence, municipalities are free to distribute their revenues over municipally delivered services, so they can choose to spend more or less on education within their overall budget resulting in substantial variation in not only expenditures per student but also in the educational services provided (Appendix 7).

Since education is a major component of municipal budgets, cost effectiveness is a major goal. The Government Institute for Economic Research analyzed the differences in productivity between municipalities in 2007. They found that the optimal municipal size was 24 000 to 37 000 inhabitants, depending on the year. Costs rose slightly as the size of the municipalities increased. But, as expected, municipal education expenditures grew with the number of basic education students in the municipality.

Though the flexibility of municipalities is quite closely related to student demand, there are municipalities that spend more than expected and those that spend less than the average. Higher than average expenditures are related to the good economy of the municipality and is usually directed to lowering class and school sizes (Finnish National Board of Education, 2012b). Smaller municipalities may still experience diseconomies of scale resulting in a narrower array of educational programs despite the state's redistribution. This has led to discussions about amalgamation of municipalities which brings with it other problems.

Number of schools and students

In 2010, there were 2 994 comprehensive schools with 535 638 students in Finland. This is a decline from 2006 when there were 3 430 schools and 568 046 students. In 2010, about 9 per cent of the schools were Swedish speaking and this proportion has not changed since 2006. According to the Finnish official statistics about 6 per cent of the children in basic education were in Swedish speaking schools, similar to the proportion of the Swedish speaking population in Finland.

School sizes

About 29% of Swedish speaking schools had 50 students or less in 2010 although there were 28 fewer such schools than in 2006. Only 1.3% of Swedish speaking schools had more than 500 pupils. About 30% of the Finnish speaking schools also had 50 students or less. About 6% of the Finnish speaking schools had more than 500 students. Most Swed-

ish speaking children were in schools with 100 to 300 students while the most Finnish speaking students were in schools with 300 to 500 students. In general, Finnish speaking students tended to study in larger schools (Table 2a and 2b).

Table 2a. Number of Swedish speaking schools and number of children 2006–2010 (Utbildningsstatistik 2011, see Westerholm, 2012)

Size	2006		2007		2008		2009		2010	
	Number of schools	Number of students	Number of schools	Number of students	Number of schools	Number of students	Number of schools	Number of students	Number of schools	Number of students
Under 50	104	3 283	96	3 057	93	2 908	92	2 933	76	2 352
50–99	76	5 231	75	5 036	76	5 129	68	4 655	67	4 389
100–299	942	15 515	89	15 459	87	15 191	90	15 809	91	15 492
300–499	23	8 272	23	8 164	22	7 695	18	6 214	19	6 556
500 plus	4	2 296	4	2 282	5	2 768	6	3 496	5	2 933
Total	295	34 597	287	33 998	283	33 691	274	33 107	258	31 722

Table 2b. Number of Finnish speaking schools and number of children 2006–2010 (Utbildningsstatistik 2011, see Kumpulainen, 2012)

Size	2006		2007		2008		2009		2010	
	Number of schools	Number of students	Number of schools	Number of students	Number of schools	Number of students	Number of schools	Number of students	Number of schools	Number of students
Under 50	1 011	30 851	915	27 936	894	27 495	822	25 398	839	22 908
50–99	529	36 993	513	35 856	471	33 219	459	32 565	450	31 849
100–299	1030	180 382	941	179 905	919	175 275	901	170 371	904	171 141
300–499	507	201 722	494	199 033	501	192 887	500	190 178	490	185 730
500 plus	146	89 477	150	91 495	145	87 829	150	90 714	153	92 288
Total	3 135	533 449	3 013	525 945	2 932	516 705	2 832	509 226	2 736	503 916

According to the Finnish Institute for Economic Research, increasing the size of schools could also improve cost effectiveness. Costs fall noticeably when the average school sizes grow from less than 100 students to 300 students but do not change much with further increases in school size (Finnish National Board of Education, 2012b).

Teachers and their credentials

Finnish teachers enjoy immense independence. Allowed to design their own lesson plans and choose their own textbooks (following loose national guidelines), Finnish teachers often regard their work as creative and self-expressive.

The shortage of teachers in the school system is of concern. A corollary of the shortage is that schools use more teachers without adequate credentials and substitute teachers. While almost 90% of teachers in Finnish speaking schools had their credentials, only less than 80% of teachers in Swedish speaking schools did. This could have an impact on student performance. (Table 3.)

Table 3. Total number of teachers and teachers with credentials in Finnish and Swedish speaking schools (Utbildningsstatistik 2011, see Kumpulainen, 2012)

Finnish speaking schools			Swedish speaking schools		
Teachers	Teachers with credentials	% Teachers with credentials	Teachers	Teachers with credentials	% Teachers with credentials
36 890	33 052	89.6	2 720	2145	78.9

Class sizes

Small class sizes and small teacher student ratios are popular with parents and teachers. However, the relationship between small class sizes and student performance is weak, while factors such as student teacher relationship and class climate have stronger effects on performance. Smaller classrooms are weighed against higher teacher salaries, professional development and better teaching technology. The average class size in Finland is quite small (20.3) (OECD, 2012b) and has been about that size since 2000.

Analyses and results

Data

OECD PISA data were used for this work relying on country and student performance in reading. In addition to descriptive analyses, multivariate analyses were conducted as well using 2009 data. When trends were required data from PISA 2000 to 2009 were used with comparisons between 2000 and 2009 when reading was the major domain. Where it was possible to combine PISA data with other information to enhance the results, in particular to produce maps, it was done. Details regarding sampling for the waves of PISA are shown in Table 4. There was oversampling of Swedish students in 2003 and 2009, which makes it difficult to compare results between 2000 and 2009. Swedish speaking schools that participated in 2009 are listed in Appendix 1. Data for Åland were not included in the analysis which focused on mainland Finland.

Table 4. School and student populations and samples in PISA, 2000, 2003, 2006 and 2009 (Väljörvi & Linna-kylä, 2002; Kupari & Väljörvi, 2005; Arinen & Karjalainen, 2007; Sulkunen & Väljörvi, 2012)

	2000		2003		2006		2009	
	Total	Sample	Total	Sample	Total ¹	Sample	Total	Sample
All schools	970	156	908	198	714	155	1721	257
All students	66571	5337	61107	6346	61387	4714	66198	6415
Finnish schools	784	148	653	147	664	144	1298	167
Finnish students	62419	5055	56279	5026	58597	4413	60566	4844
Swedish schools	48	8	51	51	50	11	122	90
Swedish students	3350	271	3504	1320	2790	301	4125	1571

¹ Estimated

Notes: All schools / all students are not necessarily the same as Finnish schools / Finnish students plus Swedish schools / Swedish students; Numbers of all schools / all students include also excluded schools (like special education schools or Åland or extremely small schools or language schools – exclusions varied from cycle to cycle). Includes also 'zero' schools. PISA 2009 includes ISCED 3 level schools.

In 2000–2006 upper secondary schools were not included in the PISA target population but they were in 2009. So the figures for the number of schools are not comparable.

Analyses used three vectors of factors drawing on individual, learning and school variables. The analysis plan was to examine descriptive and trend data before using multivariate analyses to answer the research questions. Åland data were not used in the multivariate analyses.

Research question 1: Are factors affecting the reading performance of Finnish and Swedish students the same?

Are the factors that affect reading performance of Swedish and Finnish speaking students the same and do they have the same level of effect, or are they different, resulting in greater depth and concentration of disadvantage?

Descriptive

Reading performance of students

Rank: Finland ranked third (based on the absolute score) in 2009 with its average PISA reading score of 536. Finnish students scored an average of 538 which would leave them in the same rank but just one point below Korea and 18 points below Shanghai, which

ranked first. Swedish students would rank tenth with 511 points, below Australia which scored 515 and above the Netherlands with their score of 508. The Swedish students scored 45 points below Shanghai, which would be a lag of over one year of schooling.

Excellence: The distribution of PISA reading scores by level showed that there were fewer students scoring at levels 1 and 2 for Finnish speaking students compared to Swedish speaking students (Figure 8). There were fewer top performing Swedish speaking students at levels 5 and 6.

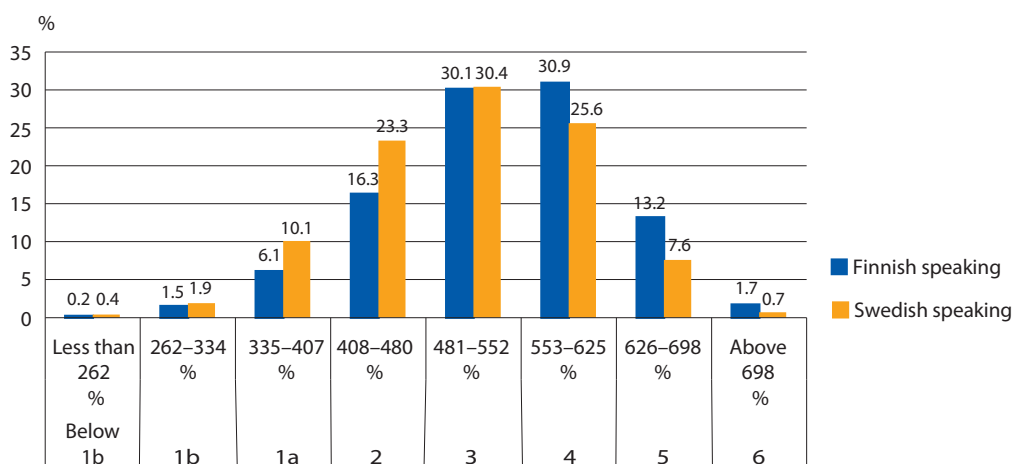
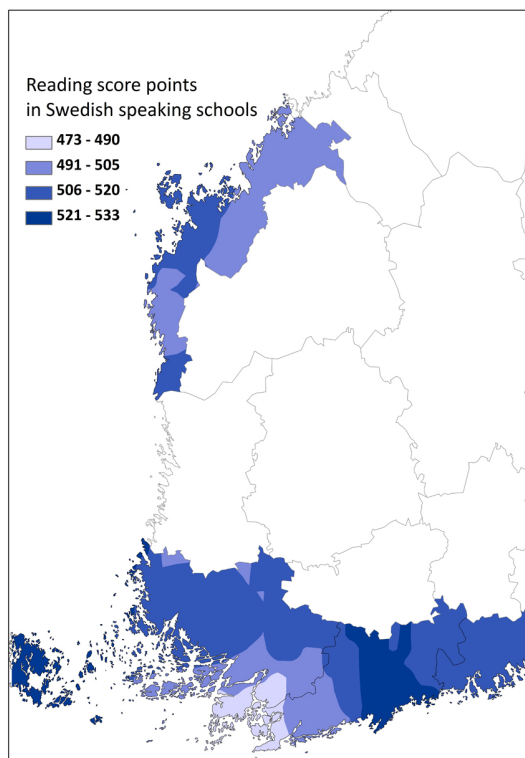


Figure 8. Students (%) at each level of the PISA reading proficiency scale, 2009

Geographic distribution: As shown in Figure 8, there were fewer students performing at level 3 and above. The geographic distribution of reading scores ranging from 416 to 557 is shown in Figure 9. Most of the areas had average performance at level 3. The two lightest colours indicate performance at the OECD average and below. Weaker performance was along the north western coast and in one area in the south. (Please see Note⁴ on Maps)

⁴ The maps do not depict actual location of schools. The regional variation of factors and score points are observed visually with the help of contour maps. These contours are produced by a spatial statistical method called kriging (i.e. Isaaks & Srivastava, 1989). Plausible values of score points (schools averages), proportion of students and background factors, and their variances as well, are estimated at the nodes of a square grid of 10 km x 10 km over entire Finland. The estimation is done based on the 5 nearest neighbours (Finnish or Swedish PISA schools) weighted by distance. If the whole data (all PISA schools) were used, 12 schools were applied. The values in the maps indicate the predicted school average of subject variables in a randomly chosen school assumed to be located in observed point. In these maps weighted values cannot be used due to the method (sliding average weighted by distance). PISA levels were not used, because school variation is so small that there would be only one color. The difference between scales is a compromise between comparability and clarity, because the of distribution of values.



Note: This map, like the other ones derived from PISA data and presented in this report, illustrates regional variation irrespective of municipal borders, and no conclusions can be drawn on this basis about the situation in individual schools. The computation model is explained on page 43.

Figure 9. Reading score points in Swedish speaking schools, PISA 2009

The differences in scores in selected districts with Finnish and Swedish speaking schools show that the greatest differences were in South Finland and the South West coast. However, the difference in Ostrobothnia (the western coast region) is low because both Finnish and Swedish speaking students had low scores. (Table 5.)

Table 5. Difference in PISA 2009 reading scores in selected areas

Areas	Finnish speaking	Swedish speaking	Difference
Helsinki area	542	527	15
South Finland	543	502	41
South west coast	538	507	31
Ostrobothnia	518	505	13

Note: Weighted data. Special computation by Jouni Vettenranta

Gender: Gender has shown to be an important variable explaining performance in reading among all PISA participating countries. A difference of about 55 points separated boys from girls in Finland (Harju-Luukkainen & Nissinen, 2011). A comparison of how Finnish and Swedish speaking boys and girls are distributed among the levels show that Swedish speaking boys have the lowest performing profile of the four groups. In fact, practically none of the Swedish speaking boys achieved level 6. When low performance (level 2 and below) was considered both Finnish speaking girls (13.3%) and Swedish speaking girls (23.1%) had lower proportions than the boys. While 34.6% of Finnish boys had scores at level 2 or below, fully 48.7% Swedish speaking boys had such low scores. The Finnish school system would be able to measurably improve performance if the reading performance of boys could be ameliorated. (Figure 10.)

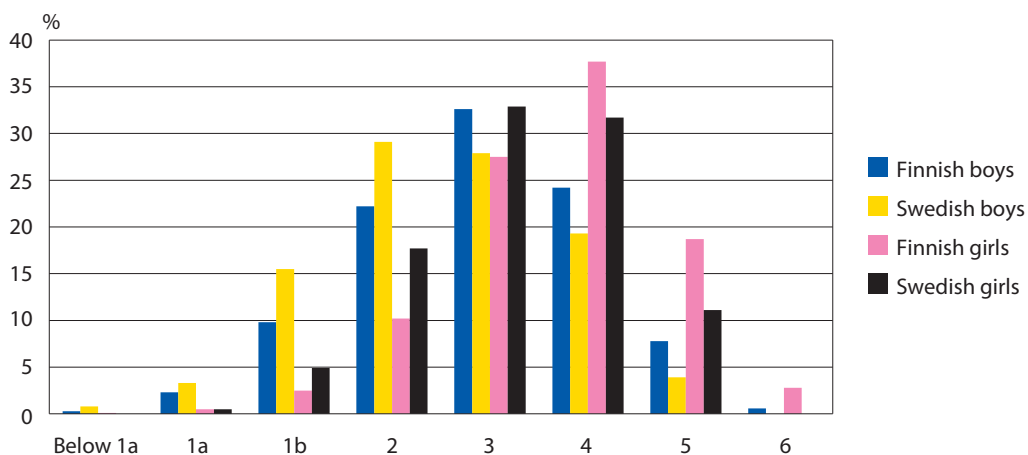


Figure 10. Percentage of Finnish speaking and Swedish speaking boys and girls at each reading level, PISA 2009

If there are areas where Swedish speaking schools are located where the gender difference is high, then more effort should be directed to gaining more gender equity. The maps below show the gender differences between Finnish and Swedish schools in the areas where the Swedish population is concentrated (Figure 11).

There are few areas where the gender difference is 25–40 points which is a lag of between 6 months and a school year, regardless of the language of the school. In the very dark areas, the lag is two school years. Therefore, gender differences appear to be a system-wide issue though there are pockets in the Finnish and Swedish school system with high gender differences.

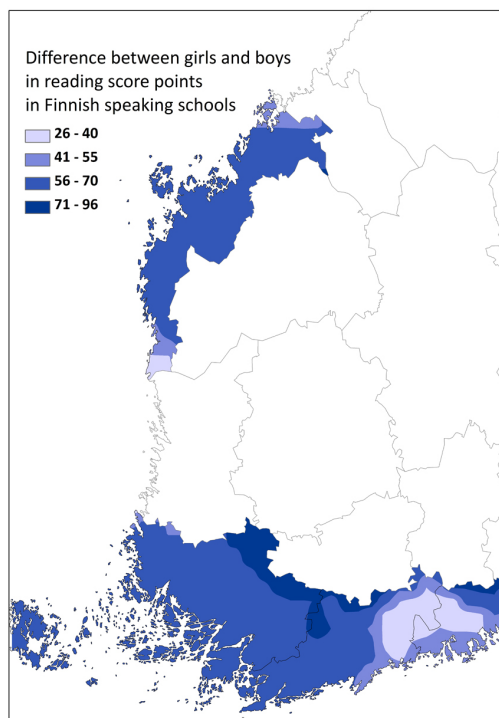


Figure 11a. Difference between girls and boys in reading score points in Finnish speaking schools, PISA 2009

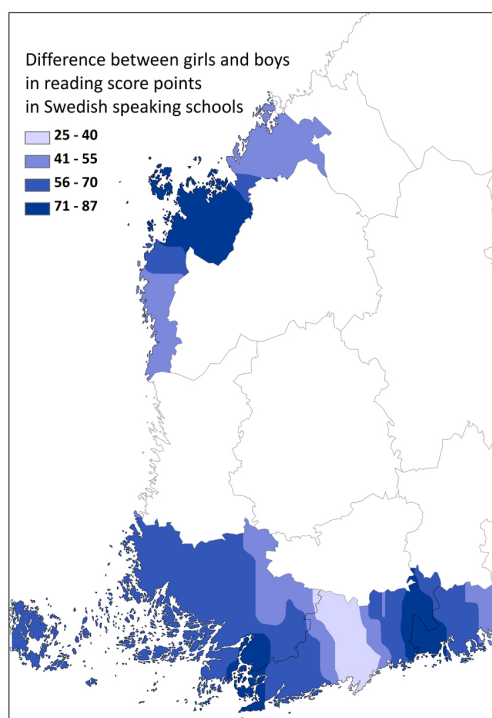


Figure 11b. Difference between girls and boys in reading score points in Swedish speaking schools, PISA 2009

Reading activities: Boys in particular tended to not only read less but also to read less diverse materials. In addition, the geographic distribution of this variable among the Swedish speaking areas shows the difference between boys and girls (Figure 12a and 12b).

Student characteristics: It can be argued that Swedish students have different characteristics and that therefore they may be more disadvantaged resulting in lower reading performance. A descriptive comparison of Finnish and Swedish student characteristics in PISA 2009 is shown in Table 6.

The biggest difference compared to Finnish speaking students is where 18% fewer children in Swedish speaking schools speak the school language at home as their primary language. Swedish students were not always at a disadvantage – more of their fathers and mothers had university degrees. More Swedish students did not enjoy reading and read less diverse material. Finnish students scored lower in Memorization strategies while Swedish students scored lower in Control strategies. Research has shown that a different primary home language from the school language and lower Joy of reading scores explain a large

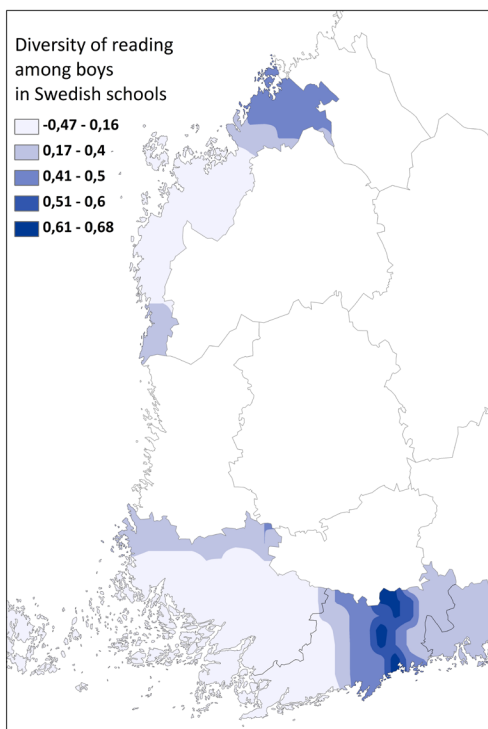


Figure 12a. Diversity of reading among boys in Swedish schools, PISA 2009

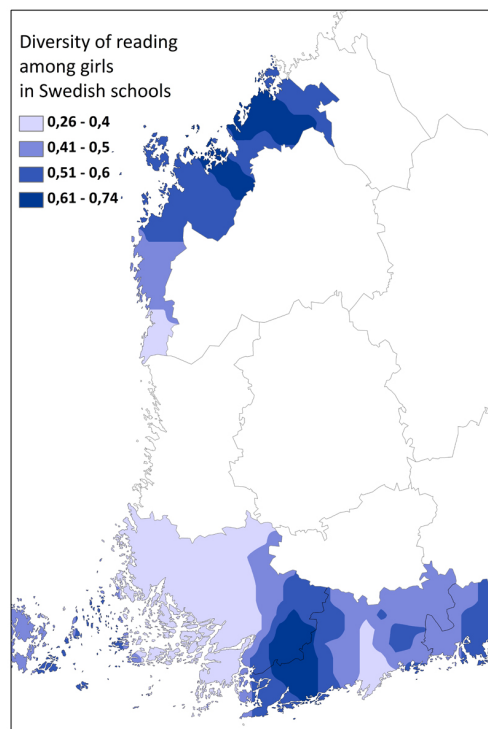


Figure 12b. Diversity of reading among girls in Swedish schools, PISA 2009

proportion of the performance score variance. The average Joy of reading score for Finnish speaking boys was -0.40 and for Swedish speaking boys was -0.55 on the index. Meanwhile, the average Joy of reading score for Finnish speaking girls was 0.51 and for Swedish speaking girls was 0.33 on the index (OECD, 2010a) The low Joy of reading index is thus due to boys in the case of both Finnish and Swedish students.

School performance in reading

Language of instruction: The reading performance among levels achieved by schools varied with the language of instruction. Finnish speaking schools had a distribution among levels that was similar to the national distribution. The Swedish speaking schools had about a third of students who performed at level 2 or below. Swedish speaking schools had fewer students performing at levels 5 and 6. (Figure 13)

Table 6. Explanatory factors for Finnish and Swedish speaking students in PISA 2009

Explanatory factors	Finnish speaking students	Swedish speaking students	Difference
Reading score	538	511	27
Urban (%)	80	78	2%
Immigrant (%)	3	1	2%
Nuclear family (%)	78	85	7%
Home language ¹ = school language (%)	97	79	18%
No aim at secondary school (%)	3	3	0
Aims at university (%)	32	33	-1%
Parental occupational status (HISEI)	52.8	56.4	-3.6%
Fathers with university degree (%)	32	41	9%
Mothers with university degree (%)	41	46	-5%
ESCS socio-economic index	0.29	0.52	-0.23
Family wealth index	-0.08	0.21	-0.29
Home educational resources index	-0.13	0.01	-0.14
Cultural possessions index	-0.19	-0.18	-0.01
Joy of reading index	0.06	-0.12	0.18
Diversity of reading index	0.46	0.37	0.09
ICT entertainment use index	0.12	0.11	0.01
Memorisation strategies index	-0.27	-0.01	-0.26
Elaboration strategies index	-0.14	-0.33	0.19
Control strategies index	-0.33	-0.52	0.19

¹ Home language is the response to the question: What language do you speak at home most of the time? It is assumed that this is the primary language though other language(s) may also be spoken.

Note: Indices used for student characteristics were constructed so the average OECD student would have a score of 0, with a standard deviation of 1. Two thirds of the students would fall between the values of =1 and -1. The differences can be seen from the indices.

Urban or rural location: Identification of the urban or rural location of the school can also be useful for targeting policy. While Finnish speaking urban schools had average performance above the national average performance, urban Swedish speaking schools and rural schools of both languages scored below (Table 7). All average scores were above the OECD average and were at level 3, however, Swedish speaking urban schools had an average score that was 19 points below and Swedish speaking rural schools had 41 points below the national average. Thus, Swedish speaking urban schools were half a school year behind while Swedish speaking rural schools were one school year behind. In addition, the difference between Swedish speaking schools in urban and rural locations was more than double the difference of Finnish speaking schools.

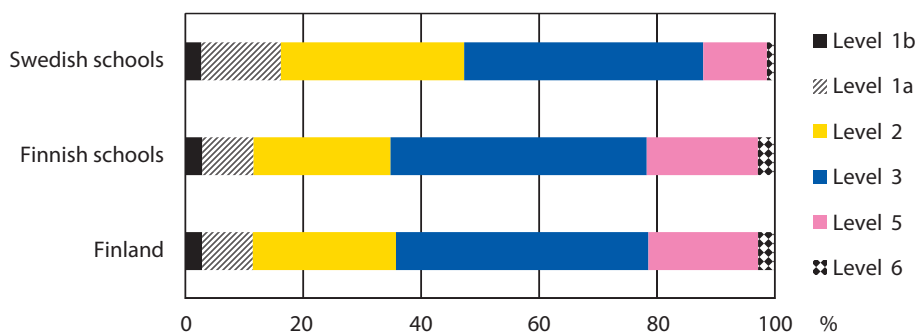


Figure 13. Per cent students in PISA levels by school language, 2009 (Data from Harju-Luukkainen & Nissinen, 2011)

Table 7. PISA reading scores by language of school and urban/rural location, PISA 2009.

Finnish speaking schools			Swedish speaking schools		
Urban	Rural	Difference	Urban	Rural	Difference
539	530	9	517	495	22

Language status of municipalities: The language status of municipalities can add to the complexities of meeting their obligations for providing equal educational services to students. Not only do bilingual municipalities have to provide schools in both languages but they have to also attempt to achieve equality of performance. The average PISA reading scores show that Finnish speaking schools had similar average PISA scores to the national average (Figure 14). All other schools had lower average scores. There were 24 points or half a school year difference between the average scores for Swedish schools in Bilingual Finnish majority municipalities and Bilingual Swedish majority municipalities. This indicates that Finnish school system is able to achieve better average results in their Swedish speaking schools in Bilingual Finnish majority municipalities than Bilingual Swedish majority municipalities.

Changes in number of schools and school size: According to the Finnish National Board of Education (2012b) in 2002 there were 3 626 basic education schools and by 2011 this number had decreased to 2 719. It is important to know whether small schools are declining more than large schools and whether there were greater declines in Swedish speaking schools than schools in Finland. There were an equal percentage of schools with less than 50 students that were closed among Swedish schools compared to all schools. One Swedish speaking school with at least 500 students has been added (Table 8).

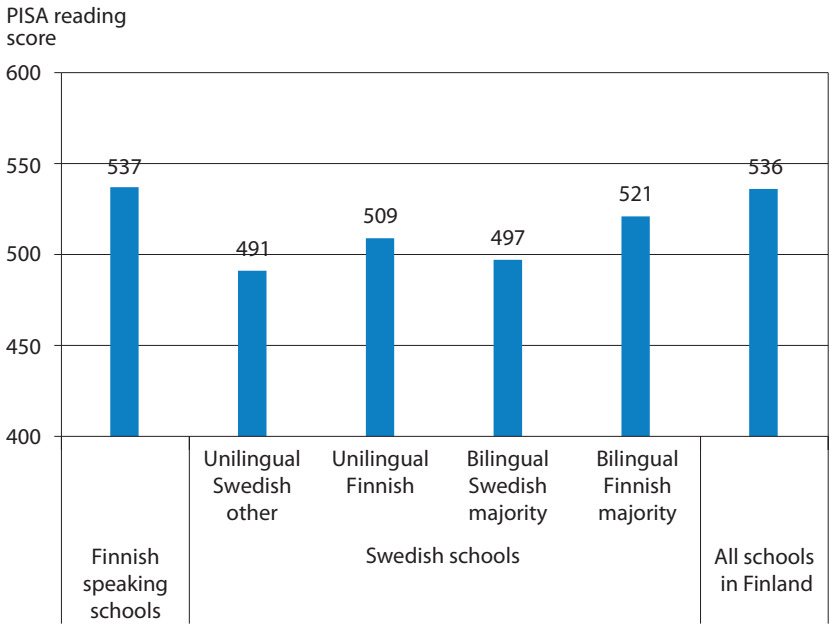


Figure 14. PISA reading score by language and school provider, PISA 2009

According to The Finnish National Board of Education, the number of basic education schools decreased in almost all municipalities over the past decade. The smallest reduction (-4.5%) was in Uusimaa and the largest (-51.2%) in Lapland between 1999 and 2009. Most of the reduction was in small schools in Eastern and Northern Finland. Well over a quarter of the schools had less than 50 students. While 11.5 per cent of all schools had less than 100 students about 21 per cent of Swedish speaking schools did. In general, Swedish

Table 8a. Number of basic education schools in Finland by size, number of students and changes between 2006 and 2010 (Statistikcentralen – Utbildningsstyrelsens rapporteringsdatabas ROPTI)

School size	2006		2010		Changes 2006–2010		Changes 2006–2010 %	
	Schools %	Students %	Schools %	Students %	Number of schools	Number of students	Per cent of schools	Per cent of students
Under 50	32.5	6.0	27.2	4.7	-300	-8 874	-26.9	-26.0
50–99	17.6	7.4	17.3	6.8	-88	-5 986	-14.5	-14.2
100–299	30.0	34.5	33.2	34.8	-35	-9 264	-3.4	-4.7
300–499	15.5	35.9	17.0	35.9	-21	-11 732	-4.0	-5.8
At least 500	4.4	16.2	5.3	17.8	8	3 448	5.3	3.8
Total	100.0	100.0	100.0	100.0	-436	-32 408	-12.7	-5.8

Table 8b. Number of basic education Swedish speaking schools by size, number of students and changes between 2006 and 2010 (Statistikcentralen – Utbildningsstyrelsens rapporteringsdatabas ROPTI)

School size	2006		2010		Changes 2006–2010		Changes 2006–2010 %	
	Schools %	Students %	Schools %	Students %	Number of schools	Number of students	Per cent of schools	Per cent of students
Under 50	35.3	9.5	29.5	7.4	-28	-931	-26.9	-28.4
50–99	25.8	15.1	26.0	13.8	-9	-842	-11.8	-16.1
100–299	29.8	44.8	35.3	48.8	3	-23	3.4	-0.1
300–499	7.8	23.9	7.4	20.7	-4	-1 716	-17.4	-20.7
At least 500	1.4	6.6	1.9	9.2	1	637	25.0	27.7
Total	100.0	100.0	100.0	100.0	-37	-2 875	-12.5	-8.3

speaking schools tend to be smaller and these are distributed along the southwestern and southern coasts. (Finnish National Board of Education, 2012b.)

School size had a varied relationship to reading performance. Students who attended smaller schools in unilingual Finnish or Swedish municipalities scored about the national average while smaller schools in other settings had lower average performance scores. (Figure 15.)

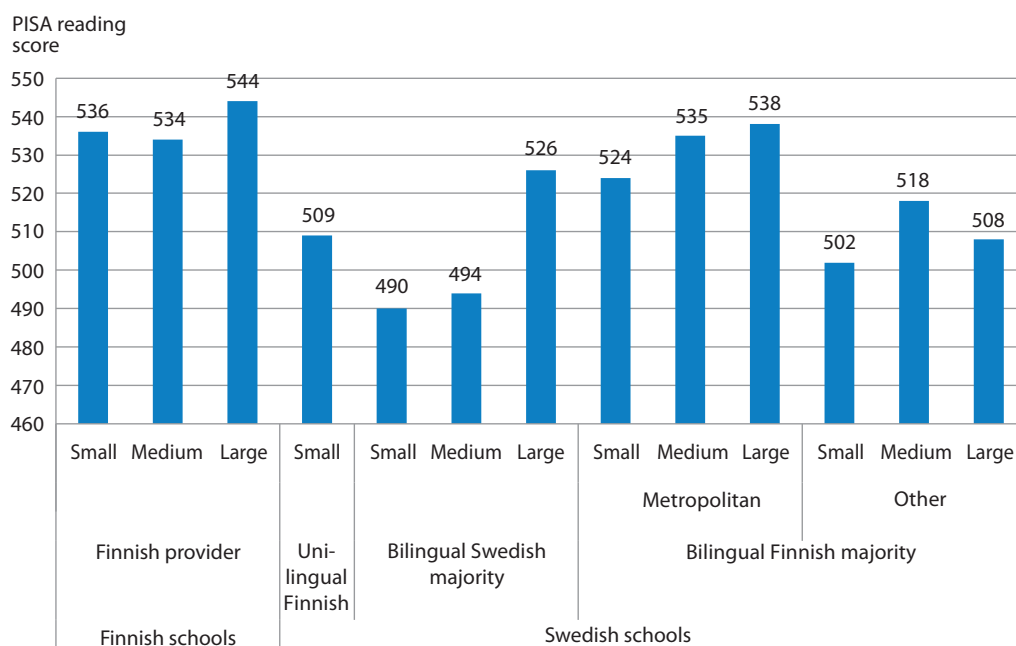


Figure 15. PISA reading score according to linguistic character of provider and school size, PISA 2009

Socio-economic status (ESCS) of schools: The socioeconomic status of the school can affect performance in several ways. First, the school could be located in a disadvantaged area and its intake of students would be primarily students with low socio-economic background. For instance, students with low socio-economic background have been shown to perform better if they attend a school with a higher ESCS index. Secondly, the school may have lower educational resources and fewer programs for students. Thirdly, such schools may have difficulty hiring good teachers and retaining them.

Figure 16 shows the distribution of schools by their ESCS scores in areas of Swedish speaking population. It can be seen that schools with higher ESCS scores were located around Vaasa and along the southern coast.

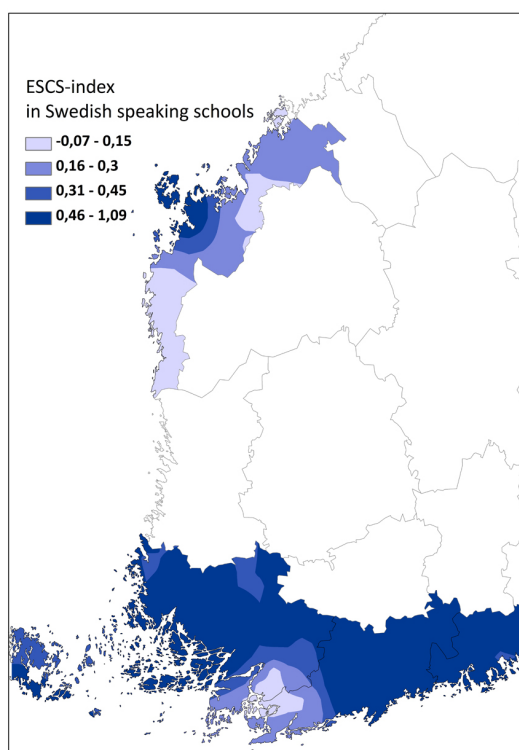


Figure 16. ESCS-index in Swedish speaking schools, PISA 2009

School expenditure: Research conducted by the OECD has shown that there was a correlation between school expenditure and performance but it was small. This was because the amount spent was less important than how the resources are used (PISA in focus, see

OECD, 2012a). Figures 17a and 17b illustrates that the correlation between municipal expenditure and performance was negative and very small for both Finnish schools and Swedish schools. It is interesting to note that schools with expenditures of between 8000 and 9000 Euros had high average scores but also scores below the national average.

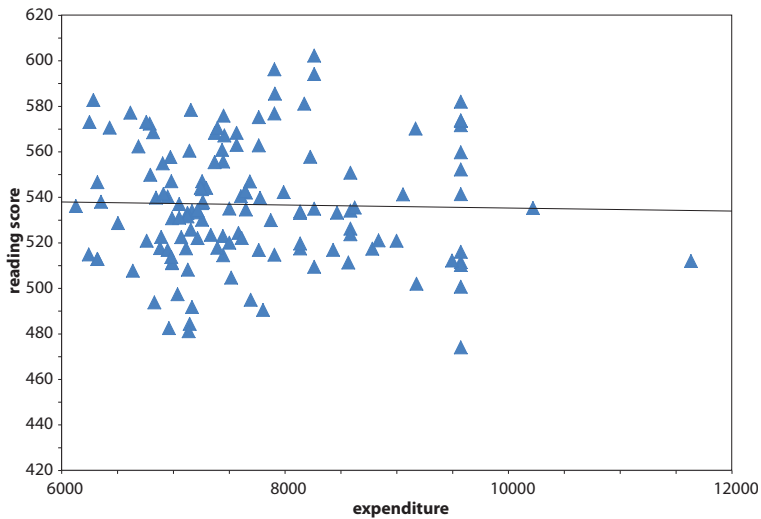


Figure 17a. Municipalities' school expenditure and reading performance, Finnish schools, PISA 2009

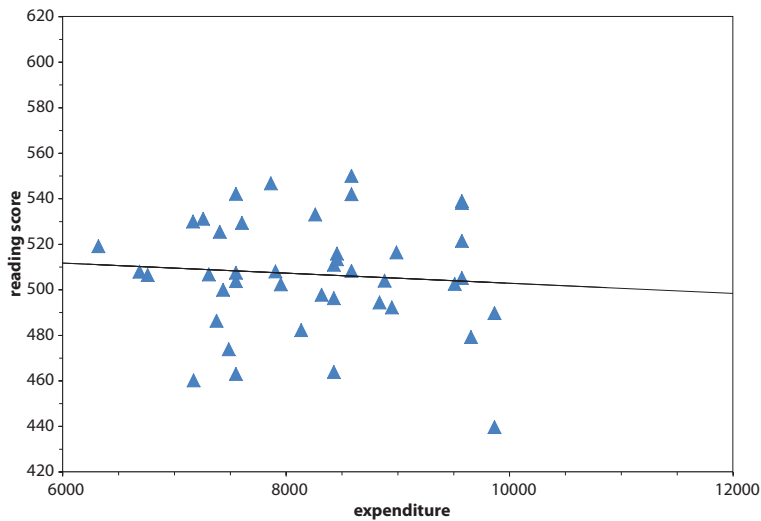
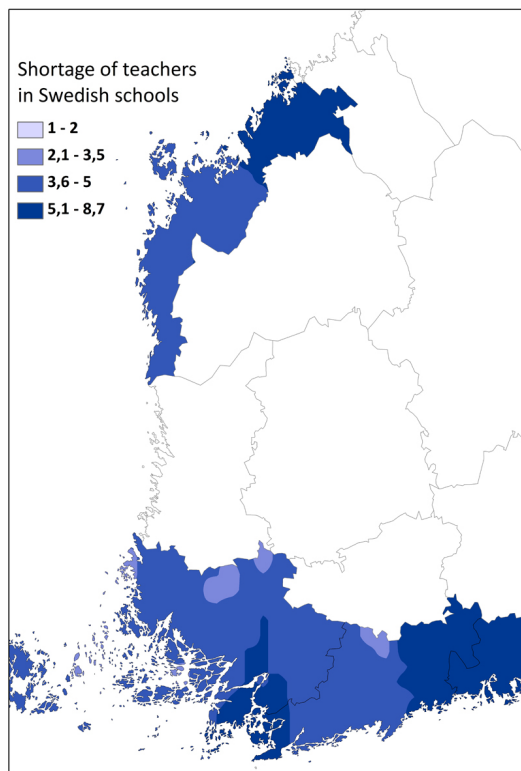


Figure 17b. Municipalities' school expenditure and reading performance, Swedish schools, PISA 2009

Teacher shortage: The index of teacher shortage for Finland in 2009 was -0.42 (OECD, 2010c). Could this shortage be concentrated in the Swedish speaking areas of the country (Figure 18)? There appears to be widespread teacher shortages in the Swedish speaking areas.



Note: Index of teacher shortage created for Finnish situation. The range is 1–13, mean 3.4, sd. 2.5. 1 = no shortage of qualified teachers, 13 = high shortage of qualified teachers.

Figure 18. Shortage of teachers in Swedish schools, PISA 2009

School characteristics: The impact on reading performance could be due to differences in school characteristics between Finnish and Swedish schools (Table 9). Teacher shortage and per cent certified teachers were the two key variables that were different.

Table 9. School-related factors in Finnish and Swedish speaking schools, PISA 2009

Explanatory factors	Finnish speaking schools	Swedish speaking schools
Teacher-student relations	-0.17	-0.04
Disciplinary climate	-0.30	-0.20
Teacher-student ratio	11.3	9.9
Class size (in test language)	19.3	17.7
Total enrollment	443	356
Student behavior	-0.45	-0.16
Teacher behavior	-0.06	-0.09
Teacher shortage	-0.47	0.32
School's educational resources	-0.18	-0.35
Certified teachers (%)	92	83
School autonomy ¹	-0.26	-0.41

¹ Created to approximately correspond with the related PISA 2000 and PISA 2003 variable

Interactions

There could be important interactions between student characteristics and school related variables. For example, Table 10 describes the performance scores for boys and girls in rural and urban Swedish speaking schools. It has already been stated that the scores for rural Swedish speaking schools was 495 and for urban Swedish speaking schools was 517, with a difference of 22 points and both below the national average. The Table 10 below indicates that the lower rural scores are related to the poor performance of boys. Urban girls, with their reading score of 542 perform above the national average while rural girls have a score that is 9 points below the national average. However, urban boys have a score 46 point below the national average (over 1 school year) while rural boys score 71 points below the national average (1 year and 9 months of school years).

Table 10. PISA reading scores in Swedish speaking schools by urban/rural location and gender, PISA 2009.

Urban			Rural		
Boys	Girls	Difference	Boys	Girls	Difference
490	542	52	465	527	62

Multivariate analysis⁵

While it is clear that a number of explanatory variables are associated with the reading performance score, it would be important to see their effects when the other variables are taken into account. Because of the large Finnish majority, the coefficients for Finnish speaking schools tend to be similar to national coefficients.

Table 11 shows the three models: First, a model explaining the variation in performance for Finland, the second for Finnish speaking schools and third, for Swedish speaking schools. Differences between the models, particularly the last two, were examined for the list of significant explanatory variables, the order and if the coefficient was positive or negative.

All three models explained around 40% of the variation in reading performance scores in 2009. As expected the models for Finland and Finnish speaking schools were very similar, with some small changes in order. Only the variable Home educational resource was dropped in the model for Finnish speaking schools. The two coefficients that varied from the model for Finland, were for Immigrant background and Home primary language same as school language. The model for Swedish speaking schools had 10 of the 15 variables in the model for Finnish speaking schools. Home primary language same as school language, Wealth, Nuclear family, Teacher student relations, School's material resources were variables that were not included. The exclusion of Home primary language same as school language was surprising, but it could mean that Swedish speaking children are generally in Swedish speaking schools, since immigrant background was already in the model. Two additional variables were included. Tellingly Teacher shortage was in the model. Father highly educated was a positive factor for reading scores. For both students in Finnish and Swedish speaking schools, the most important are those relating to student characteristics and learning strategies. Joy of reading is the most important variable for both. Though all three learning strategies were in the model, Memorization and Control were more important. In the Swedish speaking schools, the two school variables were school size and teacher shortage.

⁵ All models were developed using recommended PISA methodology developed by ACER, Australia, involving plausible values and BRR variance estimation.

Table 11. Multivariate models explaining the variation in performance for Finland, Finnish speaking schools and Swedish speaking schools, PISA 2009

Variable	Finland N=5792				Finnish speaking N=4388				Swedish speaking N=1255			
	No	Coeff	Std Error	P	No	Coeff	Std Error	P	No	Coeff	Std Error	P
Intercept		456.03	9.30	.0000		456.42	9.22	.0000		468.24	9.91	.0000
Joy of reading	1	24.57	1.42	.0000	1	24.35	1.48	.0000	1	30.43	3.54	.0000
HISEI (occupational status)	2	0.82	0.07	.0000	3	0.81	0.08	.0000	2	0.84	0.15	.0000
Male	3	-25.81	2.28	.0000	2	-26.35	2.49	.0000	4	-18.50	4.47	.0000
Memorization strategies	4	-16.19	1.51	.0000	4	-16.33	1.59	.00000	7	-9.13	3.47	.0086
Control strategies	5	14.73	1.74	.0000	5	14.27	1.89	.00000	3	16.59	3.19	.0000
Diversity of reading	6	13.33	1.78	.0000	6	13.09	1.83	.00000	5	12.88	3.32	.0001
Cultural possessions	7	7.51	1.20	.0000	7	6.67	1.27	.0000	8	6.75	2.97	.0233
Home language = school language	8	33.53	7.38	.0000	8	49.52	12.77	.0001				
Wealth	9	-5.11	1.42	.0003	9	-5.45	1.53	.0004				
Nuclear family	10	9.74	3.09	.0016	10	9.86	3.18	.0019				
Immigrant background	11	-39.71	13.00	.0023	13	-28.33	14.65	.0532	6	-58.37	19.07	.0022
Teacher-student relations	12	4.08	1.39	.0033	11	4.21	1.52	.0056				
School size	13	0.02	0.01	.0317	14	0.02	0.01	.0635	10	0.03	0.02	.0377
School's material resources	14	3.83	2.02	.0576	12	4.22	2.13	.0471				
Elaboration strategies	15	-2.15	1.21	.0752	15	-2.34	1.30	.0710	12	-4.70	2.65	.0760
Home educational resources	16	-2.29	1.31	.0798								
Teacher shortage									9	-7.52	3.40	.0270
Father highly educated									11	10.01	5.33	.0606
R-square		0.39				0.39				0.40		

Notes:

The explanatory variables are listed in the order of statistical significance. Variables significant at 0.10 level only are presented.

Shaded numbers indicate changed rank between the models

Factors in green significant for Finland only, factors in blue significant for Finnish speaking only and factors in red significant only for Swedish speaking schools.

Research question 2: Have factors affecting reading performance changed over time?

If the factors affecting the differences in Finnish and Swedish performance are identified, have they remained the same over the past decade or have they changed?

Descriptive

Student performance

Range: It has already been noted that the reading performance in Swedish speaking schools did not change over the past decade (513 to 511), while the Finnish speaking schools dropped 548 to 538. Was this due to changes at the lower or higher end of the distribution? This can be examined by comparing the minimum and maximum scores (Figure 19). While Finnish speaking minimum scores rose 27 points, Swedish speaking minimum scores fell 48 points and the minimum scores in 2009 were about 180 for both groups. At the maximum, Finnish speaking scores, fell in 2003 from 841 and maintained the level of 800 for the last three cycles. The Swedish speaking students had a high 774 in 2003 and fell to 744 in 2009. It should be noted, however, that these maximum and minimum figures are unstable because of the plausible value methodology. Therefore, the quartile distribution which is more reliable is also shown.

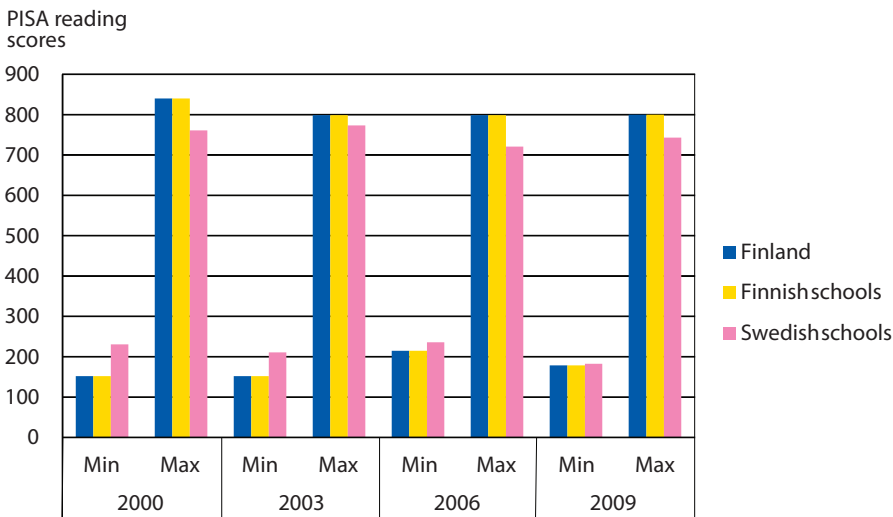


Figure 19. PISA score ranges by school language 2000–2009

The reading performance of the Finnish speaking students at the 25% quartile dropped from 494 in 2000 to 483 (11 points) in 2009 and at the 75% quartile also dropped from 610 to 599 (11 points) forming a tighter but lower distribution. The reading performance of the Swedish speaking students at the 25% quartile dropped from 458 in 2000 to 453 in 2009 (5 points) and held steady at the 75% quartile with scores of 571 and 574.

The gradients appear to remain stable over the four cycles with the Swedish speaking performance trailing the Finnish speaking performance at the 25%, 50% and 75% levels (Figure 20). The least differences were achieved between Finnish speaking students and Swedish speaking students in 2003. The difference at the 75% level has been around 25 score points in 2006 and 2009. Ironically, because the lowest score rose and the highest score dropped for Finnish speaking students, the distribution was more equitable if less excellent. The Swedish speaking distribution shifted downwards.

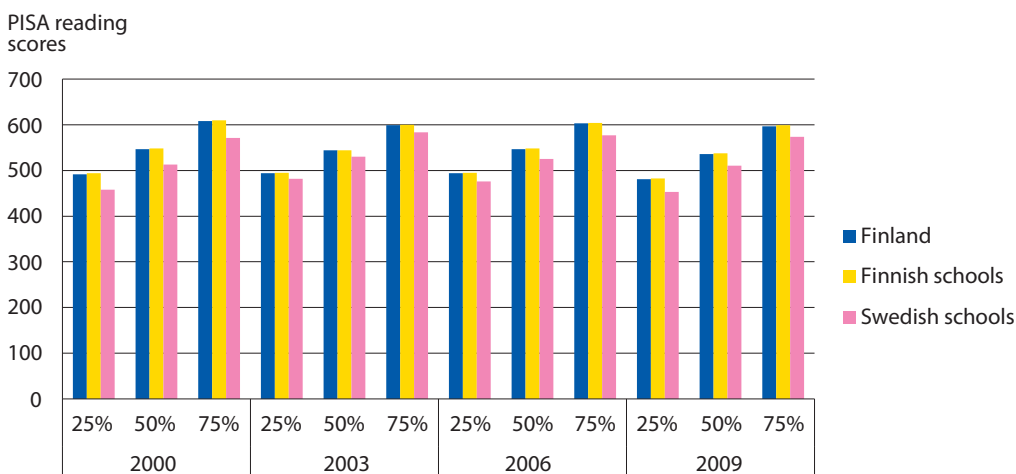


Figure 20. PISA reading scores by language 2000–2009

Changes in distribution over performance levels: Ideally, improvement would result from shifting the proportions of low performers to higher levels of performance. (Figure 21). This would mean that there was a reduction in the proportion of students at level 2 and below and an increase in level 5 and 6. In 2000, Finnish speaking students had 20.5% at level 2 and below and this proportion increased slightly to 24.1% in 2009. At level 5 and 6, Finnish speaking students had 18.9% in 2000 and this proportion fell slightly to 14.9% in 2009. Swedish speaking students had 35.4% at level 2 and below and this proportion remained stable at 35.7% in 2009. At levels 5 and 6, Swedish speaking students had 9.4% and the proportion fell slightly to 8.3%. In other words, neither the Swedish speaking

nor Finnish speaking students were able to increase the number of students with higher performance while reducing the number of students with lower performance.

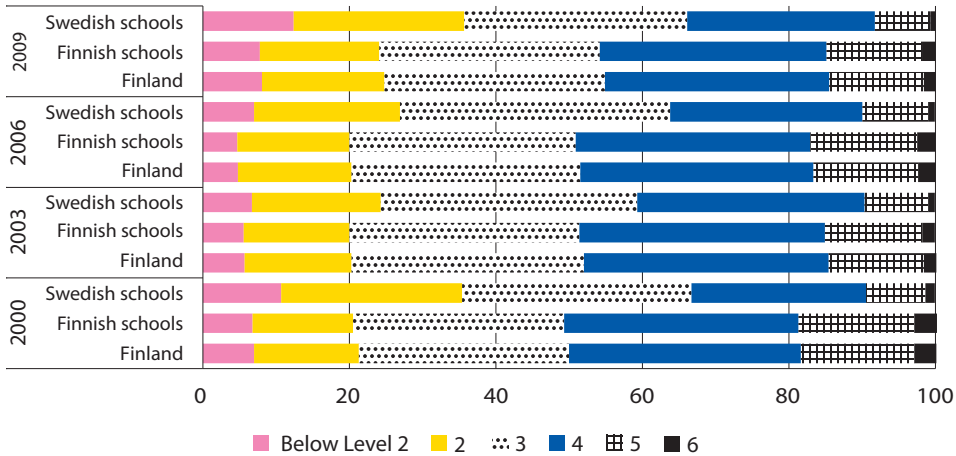


Figure 21. Distribution of reading scores among performance levels for Swedish speaking and Finnish speaking schools, 2000–2009

Number of poor and high performers: For policy purposes, it would be useful to know how many students were low or high performers because budgets are assigned per student. This can be calculated by applying population weights. In 2000, there were 12 233 students who performed at level 2 and below and the number grew to 13 882 in 2009 among students in Finnish speaking schools. In 2000, there were 1 116 students who performed at level 2 or below and that number grew to 1 379 among students in Swedish speaking schools. These students would need timely help to achieve at least level 3 performance. Among students in Finnish speaking schools, the number of high performers at level 5 and 6, were 11 278 in 2000 and the number fell to 8 582 in 2009. Among students in Swedish speaking schools, the number of high performers was 296 in 2000 and 321 in 2009.

Multivariate analysis

Regression models which explained performance were compared for 2000 and for 2009 for Finnish speaking schools (Table 12a) and for Swedish speaking schools (Table 12b) to examine if there had been a change in the factors or in the importance of the factors. This

comparison was somewhat problematic for Swedish speaking schools because the sample was not oversampled in 2000 but it was in 2009.

Table 12a. Multivariate models of explanatory variables for PISA reading performance in Finnish speaking schools 2000 and 2009

Explanatory factors	2000 N=4617				2009 N=4388			
	No	Coeff	Std Error	P	No	Coeff	Std. Error	P
Intercept		462.28	17.87	.0000		456.42	9.22	.0000
Joy of reading	1	25.62	1.56	.0000	1	24.35	1.48	.0000
Male	2	-24.50	2.74	.0000	2	-26.35	2.49	.0000
HISEI (occupational status)	3	0.78	0.10	.0000	3	0.81	0.08	.0000
Diversity of reading	4	11.40	1.52	.0000	6	13.09	1.83	.0000
Memorization strategies	5	-9.92	2.11	.0000	4	-16.33	1.59	.0000
Teacher-student relations	6	5.73	1.34	.0000	11	4.21	1.52	.0056
Nuclear family	7	10.56	3.03	.0005	10	9.86	3.18	.0019
Elaboration strategies	8	6.11	1.94	.0016	15	-2.34	1.30	.0710
Cultural possessions	9	4.49	1.49	.0026	7	6.67	1.27	.0000
Home language = school language	10	44.28	16.79	.0083	8	49.52	12.77	.0001
Immigrant background	11	-35.76	16.60	.0312	13	-28.33	14.65	.0532
Father highly educated	12	7.24	3.94	.0664				
Control strategies	13	3.50	2.07	.0911	5	14.27	1.89	.0000
Wealth					9	-5.45	1.53	.0004
School's material resources					12	4.22	2.13	.0471
School size					14	0.02	0.01	.0635
R-square		0.33				0.39		

Notes:

The explanatory variables are listed in the order of statistical significance. Variables significant at 0.10 level only are presented.

Shaded numbers indicate changed rank in the model in 2009.

Factors in blue significant in 2009 and factors in red in 2009.

Table 12b. Multivariate models of explanatory variables for PISA reading performance in Swedish speaking schools 2000 and 2009

Explanatory factors	2000 N=242				2009 N=1255			
	No	Coeff	Std Error	P	No	Coeff	Std. Error	P
Intercept		511.61	5.72	.0000		468.24	9.91	.0000
Joy of reading	1	41.45	3.92	.0000	1	30.43	3.54	.0000
School autonomy	2	30.24	7.75	.0001				
Teacher shortage	3	-31.49	9.84	.0014	9	-7.52	3.40	.0270
School's material resources	4	15.10	8.35	.0704				
HISEI (occupational status)					2	0.84	0.15	.0000
Control strategies					3	16.59	3.19	.0000
Male					4	-18.50	4.47	.0000
Diversity of reading					5	3.32	3.88	.0001
Immigrant background					6	-58.37	19.07	.0022
Memorization strategies					7	-9.13	3.47	.0086
Cultural possessions					8	6.75	2.97	.0233
School size					10	0.03	0.02	.0377
Father highly educated					11	10.01	5.33	.0606
Elaboration strategies					12	-4.70	2.65	.0760
R-square	0.30					0.40		

Notes:

The explanatory variables are listed in the order of statistical significance. Variables significant at 0.05 level only are presented.

Shaded numbers indicate changed rank in the model in 2009.

Factors in blue significant in 2009 and factors in red in 2009.

The model in 2000 for Finnish speaking schools explained 33% while 39% was explained in 2009. An examination of the models for 2000 and 2009 for Finnish speaking schools indicated that the two most important variables were unchanged over the last decade. They were Joy of reading and Male gender. Student characteristics, such as Occupational status of parent, Nuclear family and Cultural possessions do explain some of the variation, but nowhere near as much. The importance of Home primary language appears unchanged. Immigrant background is an important factor but declining in importance, however, it has

a high degree of error associated with it. Engagement with reading, such as Diversity of reading, in addition to Joy of reading continues to be important. Memorization (negative in 2000 and more negative in 2009) has a harmful effect. Elaboration strategies (positive in 2000 and negative in 2009) seem to wane while Control strategies appear to rise in importance. School factors such as Size and Resources are significant in 2009 but are less important than the other factors in Finnish speaking schools.

The models for Swedish speaking schools are harder to interpret because the sample in 2000 was small while in 2009, there was oversampling. The model for 2000 explained 30% of the variation while the model for 2009 explained 40%, almost the same as for the Finnish speaking schools in 2009. Though some broader statements can be made, results should be used with caution. Some expected factors, such as the male gender and immigrant background did not figure in 2000 at all. Students of immigrant background have grown over the past decade. Because of the high correlation between Joy of reading and Gender, once the former is in the model, the effect of gender disappeared.

The Joy of reading tops the list for both groups. Student characteristics such as Occupational status of parent, Male gender and Immigrant background contribute to the model in 2009 but not in 2000. As in the case of Finnish speaking students, the two factors of engagement with reading were Joy of reading (in 2000 and 2009) and Diversity of reading materials in 2009. Memorization and Elaboration strategies have negative values in 2009 but Control strategies was third in rank. Of school related factors, Teacher shortage was significant in both 2000 and 2009 but School autonomy and School's material resources only so in 2000. School size did not appear but it could be because of the high correlation with School's material resources. As shown earlier there was a drop of almost 25% of small schools over the past 5 years.

The commonalities between Finnish Speaking and Swedish speaking schools over time were noteworthy. Joy of reading was the top variable and its presence did not detract from the addition of diversity of reading materials. Among student characteristics, the Male gender was the primary factor, while factors such as Home primary language spoken at home and Immigrant background ranked lower. Socio-economic status related variables played but a small role. In both Finnish and Swedish speaking schools, learning strategies such as Memorization, Elaboration and Control contributed, however, the rise in importance of Control was noted. The only real difference between Finnish and Swedish schools was teacher shortage. School size appeared in both cases in 2009.

Discussion of results

Finland has been a high performing country in the past four waves of PISA, however, its score and its rank have slipped. To retain its superiority in the quality of education, it must continue to improve at the rate of high performing countries.

Excellence

Finland had an average score of 536 while Swedish speaking students had a score of 511. Shanghai, with its top score of 556 demonstrated what is possible and many countries are benchmarking against its performance. To gain an economic advantage, Finland would have to improve its average performance by 25 points to perform at an average of 561. While Finland was half a school year behind Shanghai, Swedish speaking students were more than a school year behind. The average score can be raised by both reducing the number of low performing students in level 2 and below and increasing the scores of high performing students in levels 5 and 6. In 2009, 24.1% (20.5% in 2000) of students in Finnish speaking schools and 35.7% (35.4% in 2000) of students in Swedish speaking schools were low performers. There has been no improvement in the proportion of low performing students over the last decade. The proportion of high performing Finnish

speaking students was 14.9% and Swedish speaking students was 8.3%. There is considerable scope to improve gains, considering that in Shanghai, the proportion of high performing students was 19.4%. Ideally, Finland should aim to tighten the distribution and shift it towards higher scores.

If Finland is to achieve a positive change in performance, a different tactic must be undertaken than in the past ten years. By using national weights it was possible to estimate the number of children that were low performers. In 2009, there were 13 882 who were low performers in Finnish speaking schools, and 1 379 students in Swedish speaking schools. These students would need timely help to achieve at least level 3 performance.

The average cost per student in municipalities in 2010 was about 7 000 Euros. If 1 000 Euros more were to be spent per year to improve the performance of poor performing students, it would cost 13 882 000 Euro for the Finnish Education System and 1 379 000 Euro for the Swedish school system, a total of 15 261 000 Euro which would be about a 0.4% increase on a budget 4120m Euro. If there was a 1% increase in the budget it would be an amount of 41 200 000 where it would be possible to spend 1000 Euro for each low performing Finnish speaking students and about 2000 Euro for each low performing Swedish speaking student. The premium for Swedish speaking students could be to enable them to catch up to the national average score. As shown earlier, while Finnish students lag 6 months compared to current top performance, Swedish students lag one year so such an investment could be justified. The entire increase in budget could be temporary until the goals are reached.

As shown in the maps, low performance is not evenly spread among the Swedish speaking areas of Finland. It would therefore, be better to target such spending on areas with the greatest concentration of students and the lowest scores. Because of the heterogeneity of the results among municipalities and the complexity of factors surrounding performance, it would be best to encourage municipalities to establish target goals rather than requiring standardized approaches. In Finland, there is high school autonomy which is an asset, and with goal oriented school leadership, improvements would be possible. The funding could be split into two, for instance, providing a proportion of funds to improve performance and then a premium can be paid to those schools who achieve an improvement.

The maps have also shown that some of the key factors affecting performance are also low in the same areas of low performance, providing school leaders, municipalities and the Finnish National Board of Education indicators on how these additional funds can be managed to improve performance (Figure 22).

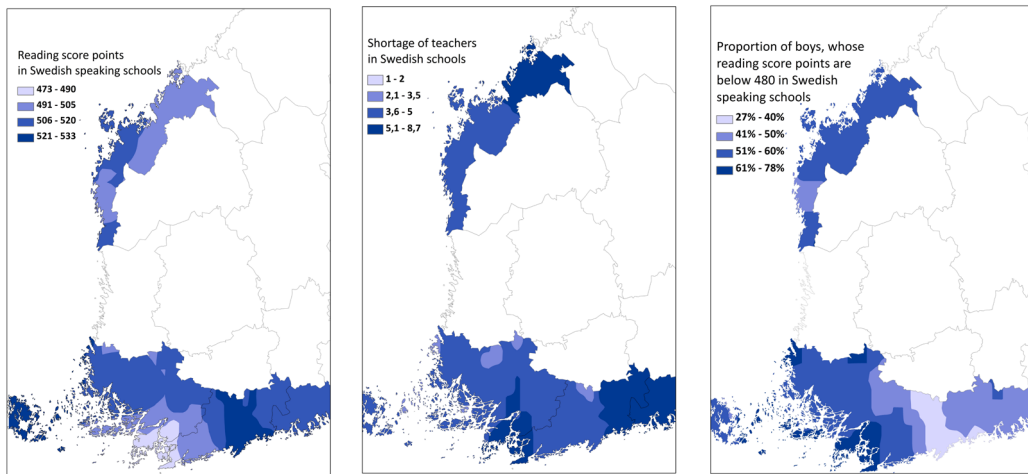


Figure 22. Co-occurrence of factors in areas of low reading performance in Swedish speaking areas of Finland, PISA 2009

Equity

There were at least five aspects of equity that were of concern and while they are linked, it shows that a standard approach nationally is less likely to be successful without some targeted efforts. First, there was a difference of 27 score points between students in Finnish speaking schools and Swedish speaking schools. Furthermore, the distribution had fewer Finnish speaking students at levels 2 and below and more at levels 5 and 6 while Swedish speaking students had the reverse. Second, Finland had a large gender gap, where the difference between the reading performance of boys and girls was 55 score points, more than a lag of 1 year and 3 months. When low performance (level 2 and below) was considered both Finnish speaking girls (13.3%) and Swedish speaking girls (23.1%) had lower proportions than the boys. While 34.6% of Finnish speaking boys had scores at level 2 or below, almost half (48.7%) of Swedish speaking boys had such low scores. Third, there was a large variation in the scores in the Swedish speaking regions of the country. The map of reading performance averages showed weaker performance along the north western coast and in one area in the south. Fourth, there were differences in performance based on the linguistic status. For instance, Swedish speaking schools in bilingual Swedish majority areas scored 24 points (half a school year) lower than Swedish speaking schools in bilingual Finnish majority areas. Fifth, Swedish speaking urban schools had an average score that was 19 points below and Swedish speaking rural schools had 41 points below the national average. The interaction between these aspects of equity and Swedish speaking schools was evident.

Reducing these equity differences would raise the average score considerably, thereby gaining both equity and excellence. It would be better to focus on areas of concentration where the need is greatest. Shanghai used a system of master teachers that mentored teachers in schools that needed help. Ontario, Canada established a “Student Success” -program with Student Success Leaders in schools. In general, goal setting for excellence generates more enthusiasm for both students and teachers than the reduction of inequity. Therefore, the stress should be on achieving the potential of both students and schools in both the Swedish and Finnish speaking schools systems.

Differences in factors affecting reading performance between Finnish and Swedish speaking students and schools

Three vectors of factors were considered: Individual, learning related and school related. Differences between Finnish speaking and Swedish speaking students and schools were examined and then their effect on reading performance. Their effect on reading performance should suggest the potential strategies which can be taken by governments, schools, teachers, parents and students themselves.

Individual factors

Gender

The gender gap was discussed above. Only Finland and Slovenia had a gender gap of 55 points while all other OECD countries had lower differences between boys and girls. The OECD average was 39 points. Chile had the lowest difference at 22 points. Among all PISA participating countries only Albania Bulgaria, Lithuania, Jordan, Trinidad and Tobago had higher differences between boys and girls than Finland. (OECD, 2010d.) Lowering the gender difference in both Finnish speaking and Swedish speaking schools should be a priority for Finland.

Socioeconomic factors

It is creditable that in Finland, while there was a relationship between reading performance and socioeconomic factors, it was small. Swedish students were not always at a disadvantage – more of their fathers and mothers had university degrees.

Home primary language

The desire for children to speak both national languages has resulted in children of one national language attending school in the second language which would be valuable in the long run, though their performance in school could be affected. Only about 1.4% of native born children in Finland spoke another language at home than their school language and their average reading score was 499, just below the national average (OECD, 2010c, Table II 4.4). A notable proportion (19%) of children in Swedish speaking schools spoke another language than Swedish in their homes as a primary language while only a tiny proportion (4%) did so in Finnish speaking schools (Harju-Luukkainen & Nissinen, 2011). Only 1% of children who spoke Finnish at home were in Swedish schools and it is because their parents would like them to speak both languages. However, Swedish speaking children tend to be able to function in several languages, for example in their use of the internet (Harju-Luukkainen & Nissinen, 2011).

Learning related factors

Joy of reading

International research has pointed out that the Joy of reading is one of the most important variables correlated with reading performance. In fact, the drop in Finnish reading scores was attributed to the decline in this variable between 2000 and 2009. Students in Finland do not have a high score on this index when compared internationally. Furthermore Finnish speaking students had a higher score on the index than Swedish speaking students. Moreover, most of this difference for both Finnish speaking students and Swedish speaking students was due to boys. Joy of reading is a key factor for reading performance in Finland as shown in multivariate analysis, controlling for other factors. According to the OECD, 64% of the gap between boys and girls can be closed in Finland, with boys scoring a predicted value of 544 if they enjoyed reading as much as girls (OECD, 2010a). Joy of reading is a policy malleable factor which can be addressed at home and at school.

Diversity of reading material

Finnish speaking students read more diverse reading materials than Swedish speaking students. The availability of a variety of reading material of interest to Swedish speaking boys and girls should be examined.

Learning strategies

There was a large difference between Finnish speaking and Swedish speaking students with regard to indices related to Memorization, Elaboration and Control strategies. The use of Control strategies is associated with higher performance and should receive attention in schools.

School related factors

Urban and rural location

While there was a 9 point difference in performance between urban and rural schools, there was a 22 point difference in Swedish speaking schools depending on location. This is a lag of half a school year. Rural schools have other factors associated with them, such as small size and teacher shortage but they could also have advantages such as higher student teacher ratios. Still, rural schools should be examined as a group to identify their particular issues.

Language status of municipalities

The issues associated with school provision related to the language status of municipalities should be better understood. There were 24 points or half a school year difference between the average scores for Swedish schools in Bilingual Finnish majority and Bilingual Swedish majority schools. This indicates that the Finnish school system is able to achieve better results in Swedish schools in Bilingual Finnish majority municipalities than Bilingual Swedish majority municipalities.

School size

School size is difficult to manage because of demographic changes and migration. However, smaller or larger schools should not penalize their students. Resourcing formulae need to be adjusted to ensure that there are no disadvantages linked to school size and that the same array of programs and services are available to students. Swedish speaking children tended to attend smaller schools. It should also be noted that closing smaller schools can result in efficiency improvements but there could be social costs to students, who may have to travel greater distances to school. The rapid rate of closures can also

mean that children may be faced with moving to a new school with a larger student body, a different school culture and new teachers which can affect performance.

Socioeconomic status of schools

Finland has had a good record of ensuring that the socioeconomic status of schools does not disadvantage them. However, indications are that the within school differences were much higher than between school differences, so it is worth checking this issue. School leaders should aim to have a high and tighter distribution of performance in their schools.

School expenditure

The correlation between school expenditure and performance was insignificant. This may be because of other related factors such as school size.

Shortage of certified teachers

The shortage of teachers in Swedish speaking schools is of concern. This may be due to an overall shortage of certified teachers available in the pool. Furthermore, it could also be that teachers are not attracted to locations where there is demand for their services. It has also been noted that there are shortages of particular certified teachers, such as in Mathematics and Science. This issue can only be addressed over time.

Implications from results for research question 1

Are the factors that affect reading performance of Swedish and Finnish speaking students the same and do they have the same level of effect, or are they different, resulting in greater depth and concentration of disadvantage?

This question is intended to see which factors were the same for Finnish and Swedish speaking students which can be addressed by a universal policy and which ones were different, where a targeted policy would be advised or which would add to the effectiveness of the national policies. If minority language students were less able to benefit from compulsory education policies as currently applied, then they may fall further behind. Indeed, it was seen that the performance for Swedish speaking students was unchanged over the last decade.

The gaps could arise because key factors may be different for Finnish and Swedish speaking students or because similar factors may have differential effects. This question was examined by constructing models for Finland, Finnish speaking and Swedish speaking schools. All three models explained around 40% of the variation in reading performance scores in 2009.

The model for Swedish speaking schools had 10 of the 15 variables in the Finnish speaking schools. The three variables that had potential for improving excellence in both Finnish speaking schools and Swedish speaking schools were Joy of reading, closing the gender gap and Control strategies. Reading diversity may be another factor that could also be addressed along with Joy of reading.

Compulsory education has generally not been too successful in increasing the Joy of reading. It is often considered a factor that should be developed at home or through the effort of the student. This should not be the case because, while it is true that children learn to read until about the age of 8, reading to learn occurs in the school years after that age. In school, the Joy of reading is eclipsed by the curriculum for the subject, Swedish or Finnish as the case may be. The idea that reading and comprehension is a life skill and a pleasurable lifelong activity is rarely transmitted in school. The diversity of reading materials is also related to this factor. It has been noted that boys in particular have low scores in Joy of reading and in Diversity of reading. In addition to fine literature, it would be important to include reading materials of interest to boys as well as girls, such as adventure, mysteries and science fiction and to introduce ways to read these not only as books but also on screen.

The gender gap is a troubling one and developing strategies to make learning relevant to boys is a challenge. Some countries have attempted to link real life situations to learning. Coop programs, shadowing of professionals and mentors were strategies to generate an interest in learning and reading.

There is a hierarchy of learning and the learning strategies associated with them. Self-regulated learning or control strategies should become a lifelong habit. According to the OECD, "students who reported beginning the learning process by figuring out what they needed to learn, who ensured that they understood what they read, tried to figure out which concepts they had not fully grasped, attempted to remember the most important points in a text and sought additional clarifying information when they did not understand something they had read, tended to perform better on the PISA reading scale than those who do not" (OECD, 2010a). On average across OECD countries, 8% of the variation in students' reading performance can be explained by the extent to which they reported using Control strategies. In Finland, 8% of the variation was explained while in Korea 19% was explained by Control strategies (OECD, 2010a). This is difficult to include in curricula but changes in teaching style can help. More learning through inquiry, joint discovery and presentation of new ideas to peers can be useful.

For Swedish speaking students, two school variables were important which indicate that school policies can be additionally important for the Swedish school system. Of these, addressing the teacher shortage should be a priority. In addition, the related factor of relying on professionals with credentials should also receive attention. Because so many of the Swedish speaking schools were small, issues related to school size should also be studied to determine if there should be policy changes.

While the factors that affect both Finnish and Swedish schools can promote excellence, school related policies targeted to Swedish speaking schools would promote equity and prevent them from falling further behind.

Implications from results for research question 2

If the factors affecting the differences in Finnish and Swedish performance are identified, have they remained the same over the past decade or have they changed?

Finland is the envy of other countries for the quality of its education. However, it is important to determine which of these policies should be retained and which ones should be considered for reform. If Finland has successfully applied policies to these factors that continue to improve performance generally and to improve the performance of the Swedish minority in particular, there would be a positive change in these factors over time. So models were developed to compare the factors that related to reading performance in 2000 and 2009 when reading was the main domain. If there were no noticeable changes in performance, it could mean that little was done to improve performance, or that the policies were no longer effective for the challenges of the day. It has already been shown that there were no appreciable differences in performance between 2000 and 2009 (actually there was a slight fall in performance) and that issues noted in 2000 such as gender differences continue to persist.

If there were positive changes in key variables, then there was partial success. But if there were more important variables in 2009 compared to 2000 then the emphasis should shift to those. Similarly, the factors of importance for Swedish speaking schools should be compared with Finnish speaking schools in order to note the possibilities for targeted policies.

The model in 2000 for Finnish speaking schools explained 33% while 39% was explained in 2009. Given the stability of the performance and the lack of changes in the model, it appears that Finland did not act or did not act forcefully enough to achieve excellence and equity.

The two most important variables, Joy of reading and Male gender remained unchanged over the last decade. Diversity of reading continued to be a factor as well. Memorization

affected performance negatively. Elaboration strategies appear to wane while Control strategies were growing in importance. This indicates some success over the four waves of PISA in improving higher order skills.

The models for Swedish speaking schools were harder to interpret because the sample in 2000 was small while in 2009, there was oversampling. The model for 2000 explained 30% of the variation while the model for 2009 explained 40%, almost the same as for the Finnish speaking schools in 2009. Though some broader statements can be made, results should be used with caution.

In Swedish speaking schools, Joy of reading is the predominant factor in both 2000 and 2009. Gender was the second most important factor. Descriptive analysis has shown that Swedish boys perform worse than either Swedish girls or Finnish boys and girls. Diversity of reading was significant in 2009. Control strategies was third in rank among factors in 2009. Of school related factors, teacher shortage was significant both in 2000 and 2009.

The fact that there are great commonalities and stability in the key variables for both Finnish speaking Swedish speaking schools over time, indicates that a common policy initiative would potentially yield results. These would apply to inculcating Joy of reading, furthering reading diversity and encouraging self-regulated learning. However, it also obvious that current policies were not effective enough and they would perpetuate inequities that exist. In addition, new and greater efforts need to be made to reduce the gender gap in reading performance. It is clear however, school related policies hold promise for improving the performance of Swedish speaking schools, particularly eliminating the teacher shortage.

The maps have shown the heterogeneity of the Swedish speaking areas of Finland, whether examined in terms of explanatory factors or of performance. This would argue for school autonomy and for school leaders to develop plans that are more responsive to local situations. So working to meeting a standard rather than standardization of approaches would be preferable.

Policy initiatives to improve excellence and equity

Finland, like other high performing OECD countries in PISA, is now eager to not only raise excellence but also to improve equity. Strategies in this regard are spurred on with the need to keep up with the pace set by other PISA participating countries on the one hand and by research that has underlined that the countries that have high equity also tend to feature high excellence on the other. In fact, Finland has set a goal to regain its top position in PISA.

Currently, there are a number of policy opportunities to ensure that the twin goals of equity and excellence are protected and promoted in Finland. Some of the strategies that arise from this analysis can inform the discussion of these on-going policy initiatives.

The National Language Strategy

The government of Finland is a signatory to the European Charter for Regional or Minority Languages and submits monitoring reports. In addition, though there is no language ombudsman, the government monitors the status of Swedish as an official language as well as other minority languages. A high level steering group chaired by the former President of Finland and Nobel Prize Winner (2008) Mr. Martti Ahtisaari recommended to the govern-

ment that a long term language strategy be formulated under the leadership of the Prime Minister to ensure that the two official national languages remain viable and vital. A plan with concrete strategies was developed by the end of 2012 to be implemented by 2015. This initiative provides a great opportunity for the Swedish education system to reform in order to achieve both excellence and equity. Good quality education for students is a primary means for ensuring the vitality of language and its use in the daily life of the country. (Discussions with the Statsrådets kansli – nationalspråkstrategin)

Municipal mergers

As explained earlier, under the Language Act of 2003 the linguistic status of municipalities are determined each decade on the basis of their population statistics. A municipality will be considered bilingual if at least 8% of its population or 3 000 of its residents speak one of the official languages as a minority. Because of demographic changes and population migrations, the language status can change. Furthermore, in order to gain administrative efficiencies, the Ministry of the Interior has engaged in municipal mergers. In 2008, there were 43 bilingual municipalities of which 22 had Swedish and 21 Finnish majorities. The 32 municipal mergers at the beginning of 2009 reduced the number of municipalities by 67. Half of the mergers combined more than two municipalities. With the result that, at the start of 2009, there were 34 bilingual municipalities, 14 with a Swedish speaking majority and 20 with a Finnish speaking majority. One third of the population or 1.5m Finns lived in bilingual municipalities where services are provided in both official languages. Approximately 140 000 Swedish speaking Finns lived in municipalities with a Finnish speaking majority and about 38 000 Finnish speakers lived in bilingual municipalities with a Swedish majority.

These municipal reforms can have intended and unintended consequences, in particular for the provision of schools for Swedish speaking minorities. The description that follows provides examples of the magnitude of the changes. During the reform process the number of Swedish-speaking and bilingual municipalities declined from 62 to 50 by the beginning of 2010. The Swedish speaking municipality of Finby became part of an unilingual municipality, with the result that Swedish services were not required there nor street signs in Swedish. Finby (in Salo) has taken an official decision to remain bilingual despite the change. Bilingual municipalities have merged with other bilingual municipalities except for Särkisalo, which became a unilingual Finnish speaking municipality. In 2009, one Finnish majority municipality was merged with two Swedish majority municipalities to form Raasepori. Two bilingual Swedish majority municipalities merged with Loviisa at the beginning of 2010. Unilingual Finnish municipalities such as Kälviä, Lahtaja and Ullava

became bilingual when they merged with Kokkola. The original plan to merge the bilingual region of Central Ostrobothnia, including the city of Kokkola with the region to its north would have reduced the services available to Swedish speakers in Kokkola. Finally, Central Ostrobothnia was merged with the bilingual region of Vaasa further south retaining services to the Swedish speakers in the area.

Further mergers are anticipated. According to the Act on the Structural Reform of Municipalities and Services, linguistic rights are to be respected and should avoid mergers which would change a bilingual municipality into a unilingual one. However, even a change to a bilingual municipality can affect the provision of schools for Finnish and Swedish speakers. But opportunities exist as well to amalgamate very small schools to improve efficiencies and resources.

Requirement for bilingual public services

The need to serve citizens in their language has made it necessary to ensure that there is a pool of well trained people who can speak Finnish and Swedish. A key way to achieve this was the teaching of both official languages in school. Up to 2004, the matriculation exam at the end of high school included an exam in both the official languages but the requirement for passing the Swedish exam was dropped then. However, facility in both languages is a requirement for university education and advantageous for work in European (where Sweden is a member), Scandinavian or Nordic organizations. However, since it was no longer necessary for Finnish speaking students to take the matriculation exam in Swedish, the proportion has been dropping steadily to 67% in 2009. It is less than 50% for boys. Some of this change has been blamed on the popularity of English. However, this results in primarily Swedish students being bilingual and even trilingual with English which increases options for work in the public service. The quality of Swedish education will be priority if bilingual services are to be achieved. (Discussion Ministry of Education and Culture)

Evaluation of Swedish education

The Finnish Education Evaluation Council has been charged with conducting a synthetic evaluation in 2011–2012 of Swedish education as part of the national education evaluation 2012–2015. The objective would be to provide comprehensive picture of Swedish schools and teaching that can support discussions for school reform. This report will complement the previous 9 reports of evaluation. This report will have the opportunity

to raise issues and to make recommendations to improve the performance of Swedish speaking students.

Additional subsidies for special education

Mainstreaming has been the means by which students with special needs can develop to their potential in a normal setting with their peers. However, the success of the learning of all students in the class requires a careful assessment of resources and teaching staff because the needs vary with the class composition, the number of such students, the level of special needs and the diversity of personalized teaching approaches required. The Ministry of Education has made recommendations to increase the subsidies for special education in both Finnish and Swedish speaking school system. (Conversation with the Ministry of Education and Culture)

Education guarantee

Finland has introduced a "social guarantee" where young people under 25 and new qualification holders under 30 will be offered a job, on the job training, a seat for study at an institution, or a place in a workshop/rehabilitation program within three months of becoming unemployed. This is a good example of an "all of government" approach to problem solving with the lead being taken by the Ministry of Employment and the Economy. The education guarantee is a component where every school leaver will be guaranteed a place in upper secondary school, vocational education, training, apprenticeship or rehabilitation. The objective is to ensure that by the end of the decade, 90% of 20–24 year olds will have post-compulsory education.

The importance of comprehensive education is rightly recognized for its role in equipping children with the knowledge and skills needed in working life, society and further education. Therefore, special development measures are planned. Both the goals of excellence and equity discussed in this report have special meaning for the success of this policy initiative.

Equity goals set by the Ministry of Education and Culture

The Ministry of Education and Culture in its report "Education and research 2011–2016 – A development plan" states that "basic education will be developed as uniform instruction

catering for the whole age group and securing equal prerequisites for all. Measures will be taken to prevent differentiation and to even out observed differences". It has also set equity targets for 2020 in the Research plan for 2012–2016. These are to halve the difference between schools, boys and girls, and the impact of socio-economic and ethnic backgrounds on learning performance. This report has much to offer for discussions relating to achieving these equity goals and would benefit from also considering excellence goals. (Karlsson, 2012.)

Toppkompetens project

The Swedish section of the National Board of Education with funding from the Ministry of Education and Culture has launched the Toppkompetens project. Its primary goals are to support the development of a professional culture, to use evaluation and research results for decisions and to strengthen school leadership, especially the principals and rectors role. Through these efforts, it is hoped to improve students' learning readiness, to improve Finnish teaching in Swedish schools and to increase students' interest in science.

These will be achieved by sharing working approaches, methods and models for improving teaching, focused effort especially on science, collaboration with universities, local development plans combined with research and training and linkages with municipal school development plans.

The analysis in this paper can be useful for the Toppkompetens project, providing it with a solid research base.

Conclusion

Finland can be proud of its achievements in education. However, in order to maintain its leadership status, an emphasis on improving equity and excellence in the education system will pay dividends. Research has shown that countries that have high equity also are able to achieve excellence. The research in this report provides individual, school and national strategies where effort can be directed. However, because of the heterogeneity of the Swedish speaking areas, school leadership must choose customized solutions rather than standardized approaches. The Swedish school system can improve performance by reducing the proportion of low performers, reducing the difference between boys and girls, improving the joy of reading by teaching it as a life skill and a rewarding activity, increasing the proportion of high performers, and reducing the within school variation in schools by compensatory measures with regard to teachers and resources. Improvement in performance can be achieved by small additional costs for targeted programs that complement universal ones with a major effort to improve both equity and excellence. Finland will only gain by such an investment both now and in the future.

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Appendix 1. Swedish speaking schools in PISA 2009

In 2009 in Finland, 5810 students participated in PISA in total of which 1407 were students from Swedish speaking schools. 50.7 percent were girls and 49.3 percent were boys. Altogether 57 Swedish speaking schools and one school with both Finnish and Swedish instruction took part.

The Swedish speaking schools that took part are listed according to region and ranked by size.

Nyland (22 schools)

Källhagens skola
 Höjdens skola
 Rudolf Steiner skolan i Helsingfors
 Mikaelsskolan
 Hangö högstadium
 Munksnäs högstadieskola
 Åshöjdens grundskola
 Högstadieskolan Lönkan
 Högstadieskolan Svenska normallyceum
 Botby högstadieskola
 Sökövikens skola
 Mattlidens skola
 Helsinges skola
 Lagstads skola
 Karis svenska högstadium
 Ekenäs högstadium
 Lovisanejdens högstadium
 Hagelstamska skolan
 Lyceiparkens skola
 Winellska skolan
 Kungsvägens skola
 Strömborgska skolan

Österbotten (15 schools)

Cronhjelmsskolan Gymnasiet i Petalax
 Högstadiet i Petalax
 Vaasan ammattiopisto
 Vasa övningsskola
 Närpes högstadieskola
 Korsholms högstadium
 Donnerska skolan
 Borgaregatans skola

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Oxhamns skola
Sursik skola
Ådalens skola
Tegengrenskolan
Carleborgsskolan
Kristinestads högstadieskola

Åland (10 schools)

Godby högstadieskola
Övernäs högstadieskola
Strandnäs skola
Brändö grundskola
Föglö grundskola
Kumlinge skola
Kökars grundskola
Sottunga grundskola
Kyrkby högstadieskola
Ålands lyceum

Åboland (6 schools)

S:t Olofsskolan
Skärgårdshavets grundskola
Dragsfjärds centralskola
Kimitonejdens skola
Sarliniska skolan
Kyrkbacken skola

Språköarna (4 schools)

Björneborgs svenska samskola
Kotka svenska samskola
Svenska samskolan i Tammerfors
Svenska Privatskolan i Uleåborg

Appendix 2. The seven levels of proficiency in PISA reading

Level	Score lower limit	Tasks
6	698	<ul style="list-style-type: none"> • Makes multiple inferences, comparisons and contrasts that are both detailed and precise • Demonstrates a full and detailed understanding of one or more texts and may involve integrating information from more than one text. • May require the reader to deal with unfamiliar ideas in the presence of prominent competing information and to generate abstract categories for interpretations. • Reflect and evaluate tasks which may require the reader to hypothesize about or critically evaluate a complex text on an unfamiliar topic, taking into account multiple criteria or perspectives and applying sophisticated understandings from beyond the text. • Access and retrieve tasks; there are limited data about these tasks at this level but it appears that a salient condition is precision of analysis and fine attention to detail that is inconspicuous in texts.
5	625	<ul style="list-style-type: none"> • For all aspects of reading, tasks at this level typically involve dealing with concepts that are contrary to expectations. • Retrieving tasks require the reader to locate and organize several pieces of deeply embedded tasks, inferring which information in the text is relevant. Reflective tasks require critical evaluation or hypothesis, drawing on specialized knowledge. Both interpretive and reflective tasks require a full and detailed understanding of a text whose content or form is unfamiliar.
4	552	<ul style="list-style-type: none"> • Retrieving information tasks require the reader to locate and organize several pieces of embedded information. • Some interpretive tasks at this level require interpreting the meaning of nuances of language in a section of text by taking into account the text as a whole. Other interpretative tasks require understanding and applying categories in an unfamiliar context. • Reflective tasks at this level require readers to use formal or public knowledge to hypothesize about or critically evaluate a text. Readers must demonstrate an accurate understanding of long or complex texts whose content or form may be unfamiliar.
3	480	<ul style="list-style-type: none"> • Tasks at this level require the reader to locate and in some cases to recognize the relationship between several pieces of information that must meet multiple conditions. • Interpretive tasks require the reader to integrate several parts of a text in order to identify a main idea, understand a relationship or construe the meaning of a word or phrase. They need to take into account many features in comparing, contrasting or categorizing. Often the required information is not prominent or there is much competing information; or there are other text obstacles such as ideas that are contrary to expectation or negatively worded. • Reflective tasks at this level may require connections, comparisons and explanations or they may require the reader to evaluate a feature of the text. Some reflective tasks require readers to demonstrate a fine understanding of the text in relation to familiar, everyday knowledge. Other tasks do not require detailed text comprehension but require the reader to draw on less common knowledge.

(continues)

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Appendix 2. (continues)

2	407	<ul style="list-style-type: none"> • Some tasks at this level require the reader to locate one or more pieces of information, which may need to be inferred and may need to meet several conditions. • Other tasks require recognizing the main idea in a text, understanding relationships or construing meaning within a limited part of the text when the information is not prominent and the reader must make low level inferences. • Tasks at this level may involve comparisons or contrasts based on a single feature in the text. • Typical reflective tasks at this level requires readers to make a comparison or several connections between the text and outside knowledge, by drawing on personal experience and attitudes.
1a	335	<ul style="list-style-type: none"> • Tasks at this level require the reader to locate one or more independent pieces of explicitly stated information; to recognize the main theme or author's purpose in a text about a familiar topic, or to make simple connection between information in the text and common everyday knowledge. • Typically the required information in the text is prominent and there is little, if any, competing information. • The reader is explicitly directed to consider relevant factors in the task and in the text.
1b	Below 335	<ul style="list-style-type: none"> • Tasks at this level require the reader to locate a single piece of explicitly stated information in a prominent position in a short, syntactically simple text with a familiar context and text type, such as a narrative or a simple list. • The text typically provides support to the reader, such as repetition of information, pictures or familiar symbols. • There is minimal competing pieces of information.

Appendix 3. The percentage of Swedish speakers in selected municipalities, 2011

Name in Finnish	Name in Swedish	Language(s)	Swedish speaking percentage, 31 December 2011	Region
Espoo	Esbo	F-S	8.0	Uusimaa
Hanko	Hangö	F-S	42.9	Uusimaa
Helsinki	Helsingfors	F-S	6.0	Uusimaa
Kaskinen	Kaskö	F-S	27.6	Ostrobothnia
Kauniainen	Grankulla	F-S	37.5	Uusimaa
Kirkkonummi	Kyrkslätt	F-S	17.9	Uusimaa
Kokkola	Karleby	F-S	13.5	Central Ostrobothnia
Lapinjärvi	Lapträsk	F-S	32.9	Uusimaa
Lohja	Lojo	F-S	3.9	Uusimaa
Loviisa	Lovisa	F-S	42.4	Uusimaa
Myrskylä	Mörskom	F-S	10.1	Uusimaa
Porvoo	Borgå	F-S	30.9	Uusimaa
Pyhtää	Pyttis	F-S	8.4	Kymenlaakso
Sipoo	Sibbo	F-S	36.7	Uusimaa
Siuntio	Sjundeå	F-S	30.0	Uusimaa
Turku	Åbo	F-S	5.3	Varsinais-Suomi
Vaasa	Vasa	F-S	24.4	Ostrobothnia
Vantaa	Vanda	F-S	2.8	Uusimaa
Brändö		S	82.1	Åland
Eckerö		S	89.0	Åland
Finström		S	92.5	Åland
Föglö		S	87.0	Åland
Geta		S	89.4	Åland
Hammarland		S	93.3	Åland
Jomala		S	91.1	Åland
Kökar		S	90.0	Åland
Korsnäs		S	88.7	Ostrobothnia
Kumlinge		S	87.5	Åland
Larsmo	Luoto	S	92.2	Ostrobothnia
Lemland		S	93.4	Åland
Lumparland		S	92.5	Åland
Mariehamn	Maarianhamina	S	86.4	Åland

(continues)

Appendices

Appendix 3. (continues)

Närpes	Närpiö	S	86.3	Ostrobothnia
Saltvik		S	93.4	Åland
Sottunga		S	90.3	Åland
Sund		S	92.6	Åland
Vårdö		S	89.1	Åland
Ingå	Inkoo	S-F	55.4	Uusimaa
Jakobstad	Pietarsaari	S-F	56.1	Ostrobothnia
Kimitoön	Kemiönsaari	S-F	70.7	Varsinais-Suomi
Korsholm	Mustasaari	S-F	69.6	Ostrobothnia
Kristinestad	Kristiinankaupunki	S-F	56.0	Ostrobothnia
Kronoby	Kruunupyy	S-F	81.9	Ostrobothnia
Malax	Maalahti	S-F	86.8	Ostrobothnia
Nykarleby	Uusikaarlepyy	S-F	88.1	Ostrobothnia
Pargas	Parainen	S-F	57.0	Varsinais-Suomi
Pedersöre	Pedersören kunta	S-F	89.8	Ostrobothnia
Raseborg	Raasepori	S-F	65.6	Uusimaa
Vörå	Vöyri	S-F	82.2	Ostrobothnia

- **S** = monolingually Swedish-speaking
- **S-F** = majority Swedish-speaking
- **F-S** = majority Finnish-speaking

Appendix 4. Area, population and GDP by region (NUTS 3)

Region	Land area	Population	Change, %	GDP ²⁾	GDP per capita
	km ²			€ mil.	Whole country = 100
	1.1.2012	31.12.2011 ¹⁾	2011 ¹⁾	*2009	*2009
<i>Mainland Finland:</i>	302 340	5 372 913	0.5	171 869	100
Uusimaa	9 096	1 549 058	1.1	³⁾ 66 584	³⁾ 136
Varsinais-Suomi	10 661	467 217	0.4	13 871	93
Satakunta	7 957	226 567	-0.2	6 599	89
Kanta-Häme	5 200	175 230	0.4	4 592	82
Pirkanmaa	12 446	491 472	0.7	14 545	93
Päijät-Häme	5 125	202 236	0.2	5 283	81
Kymenlaakso	5 148	181 829	-0.3	4 913	83
South Karelia	5 613	133 311	-0.3	3 836	88
Etelä-Savo	13 977	153 738	-0.6	3 829	76
Pohjois-Savo	16 768	248 130	0.1	6 541	81
North Karelia	17 763	165 906	0.0	3 947	73
Central Finland	16 704	274 379	0.3	7 374	83
South Ostrobothnia	13 444	193 735	0.1	4 977	79
Ostrobothnia	7 750	179 106	0.7	5 815	102
Central Ostrobothnia	5 019	68 484	0.2	2 076	90
North Ostrobothnia	35 507	397 887	0.7	10 358	82
Kainuu	21 501	81 298	-0.9	1 828	68
Lapland	92 662	183 330	-0.1	4 901	82
Åland	1 552	28 354	1.2	1 321	148
Finland	303 893	5 401 267	0.5	173 267	100

1) According to the regional division of 1 January 2012

2) Gross domestic product at market prices

3) Incl. Itä-Uusimaa

* Preliminary data

Sources: Statistics Finland, National Accounts, Demographic statistics; National Land Survey of Finland, 2012

Appendix 5. Current expenditure on regular education system by type of expenditure, 2010

Type of expenditure	EUR million	%
Pre-primary education ¹⁾	312	2.7
Comprehensive school education	4 120	35.7
Upper secondary general education	695	6.0
Vocational education	1 614	14.0
Apprenticeship training	177	1.5
Polytechnic education	896	7.8
University education and research ²⁾	2 162	18.8
Other education	442	3.8
Administration	242	2.1
Financial aid for students	871	7.6
Total	11 532	100.0

Notes:

- 1) Pre-primary education for 6-year-old children (pre-school education) in day-care centres and comprehensive schools.
- 2) Includes universities' external financing for research.

Source: Statistics Finland. Education.

Appendix 6. Number of boys and girls in comprehensive schools by region, 2012

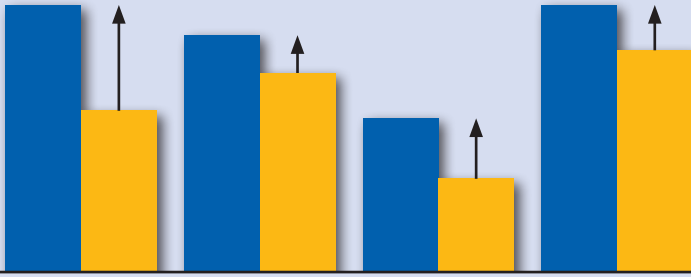
Region	Number of comprehensive schools	Total students	Boys	Girls
Finland, total	2 789	539 545	276 363	263 182
Mainland Finland, total	2 766	536 732	274 911	261 821
Uusimaa	600	152 613	77 699	74 914
Varsinais-Suomi	234	44 614	23 022	21 592
Satakunta	142	21 797	11 273	10 524
Kanta-Häme	97	17 827	9 047	8 780
Pirkanmaa	215	48 667	24 828	23 839
Päijät-Häme	90	19 429	9 862	9 567
Kymenlaakso	100	16 956	8 657	8 299
South Karelia	61	11 931	6 067	5 864
Etelä-Savo	101	13 913	7 165	6 748
Pohjois-Savo	128	24 102	12 358	11 744
North Karelia	86	15 558	7 941	7 617
Central Finland	148	27 244	13 856	13 388
South Ostrobothnia	167	21 187	10 984	10 203
Ostrobothnia	145	18 865	9 782	9 083
Central Ostrobothnia	60	7 746	3 941	3 805
North Ostrobothnia	229	49 557	25 776	23 781
Kainuu	44	7 397	3 751	3 646
Lapland	119	17 329	8 902	8 427
Åland	23	2 813	1 452	1 361

Source: Statistikcentralen – Utbildningsstyrelsens rapporteringsdatabas ROPTI.

Appendix 7. Comparison between actual and calculated costs in municipalities for basic education 2010

Provider	Pre-school	Students, grades 1-9	Of which students over 17	Immigrant preparation	Total number of students	Actual cost per student	Calculated state share per student	Difference per student	Calculated % state share per student	Total difference, Euro
Kaskö	13	96	0	0	108	10,352	6,685	3,667	65	395,988
Mörskom	21	121	0	0	141	8,518	6,128	2,389	72	336,906
Korsnäs kommun	18	141	0	4	163	9,514	7,228	2,286	76	371,517
Vörå-Maxmo	57	515	2	0	571	9,553	7,666	1,888	80	1,077,854
Sjundeå	90	689	0	0	779	7,583	6,110	1,472	81	1,146,318
Helsingfors	4,630	36,511	171	356	41,497	7,988	6,781	1,208	85	50,121,313
Lovisa	160	1,529	2	0	1,688	8,547	7,340	1,207	86	2,037,756
Malax kommun	48	618	2	0	666	10,117	8,747	1,371	86	912,081
Korsholms kommun	256	2,028	1	0	2,284	7,797	6,895	902	88	2,059,705
Grankulla	114	1,294	0	0	1,408	7,645	6,842	804	89	1,131,337
Esbo	3,030	25,680	56	279	28,989	7,228	6,542	686	91	19,884,240
Hangö	97	905	0	0	1,002	7,066	6,600	466	93	467,110
Sibbo kommun	265	2,494	1	0	2,759	6,800	6,294	505	93	1,394,282
Lojo	480	4,807	2	10	5,297	6,800	6,399	401	94	2,124,644
Vasa	619	4,947	11	76	5,642	7,515	7,028	487	94	2,747,728
Närpes stad	80	841	1	0	921	8,865	8,519	346	96	318,943
Borgå	602	5,494	1	15	6,110	6,861	6,606	254	96	1,554,748
Kimtoön	70	697	0	0	766	8,883	8,643	239	97	183,188
Kyrkslätt	602	4,802	2	5	5,408	6,215	6,059	156	97	845,883
Pargas stad	186	1,725	0	0	1,910	7,912	7,767	145	98	276,387
Åbo	1,462	13,175	98	73	14,709	7,230	7,108	121	98	1,786,068
Larsmo kommun	101	774	0	0	875	6,896	6,802	94	99	82,263
Raseborg	284	2,878	4	7	3,169	7,445	7,368	76	99	241,073
Karleby	587	5,097	10	18	5,702	6,642	6,618	25	100	140,314
Nykarleby stad	76	733	0	18	826	8,423	8,415	7	100	5,924
Vanda	2,335	20,247	58	240	22,821	6,450	6,541	-92	101	-2,090,469
Oravais kommun	19	159	0	31	209	10,067	10,240	-173	102	-35,967
Pedersöre kommun	193	1,550	1	0	1,742	7,532	7,705	-174	102	-302,334
Kronoby kommun	80	734	0	0	814	7,886	8,258	-373	105	-303,215
Jakobstads stad	215	2,150	0	21	2,385	6,856	7,407	-551	108	-1,314,838
Kristinestads stad	47	677	0	25	748	7,928	8,791	-863	111	-645,778

Source: Finnish National Board of Education, 2012a



THIS REPORT examines the special characteristics of the Swedish education system in Finland and explores reasons for the differences between Swedish speaking and Finnish speaking students' performance in PISA assessments. The main author, Dr. Satya Brink, is a distinguished international expert in policy relevant research and in translating complex research evidence and policy options for decision makers and the public. Consequently, this report offers a well-informed outside perspective on the merits and challenges of the Finnish comprehensive school with a particular emphasis on the lower performance of the Swedish speaking minority students, thus supplementing earlier national research into school achievement.

The report clearly points out that the equity of education is a key strength of the Finnish school system, but discusses also the differences in social, regional and linguistic contexts between the Finnish speaking and Swedish speaking sectors of basic education in Finland, which partly manifest themselves in the differences in student achievement. It discusses some individual, school and national policy strategies.

The report is closely related to the Finnish Education Evaluation Council reviews on Swedish speaking education in Finland. The report is published by the Finnish Institute for Educational Research in collaboration with the Evaluation Council.