



THE FINNISH EDUCATION SYSTEM AND PISA

SIRKKU KUPIAINEN | JARKKO HAUTAMÄKI | TOMMI KARJALAINEN

CONTENTS

4 INTRODUCTION

7 KEY FEATURES OF
THE FINNISH EDUCATION SYSTEM

25 FINNISH STUDENTS'
RECURRENT SUCCESS IN PISA

45 HOW TO EXPLAIN FINNISH
STUDENTS' GOOD PERFORMANCE

55 CONCLUSIONS

INTRODUCTION

The exceptionally high attainment of Finnish students in PISA 2000, 2003 and 2006 in all three literacy domains has aroused continuous international interest toward the Finnish education system. To respond to this interest, we present in this booklet a short overview of the Finnish education system and of Finnish students' performance in PISA, aiming at showing how the first helps to understand and explain the latter.

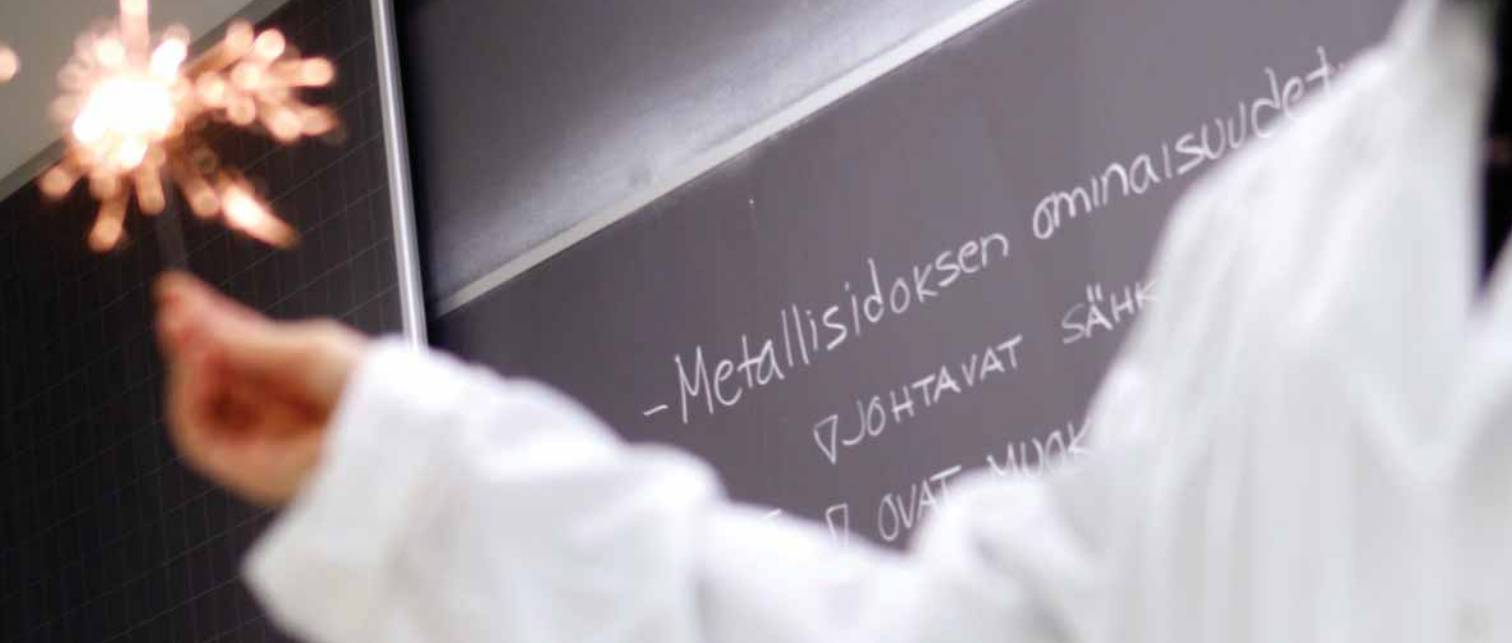
Since the release of the first results of PISA 2000, Finnish students' good performance has generated many candidates for 'key explana-

tions', ranging from the phonetic character of the Finnish language to reading as a common pastime across the social strata, and from free school meals to research-based teacher education. When writing the national report on Finnish results for PISA 2006, however, the close affinity of the objectives of the Finnish basic school reform of 1970s with those of PISA a quarter of a century later began to emerge as the salient factor underlying many of the explanations given for the Finnish success until then. Building on that more inclusive report, the current presentation undertakes to of-

fer a concise account of the reasons which at this moment seem to be the most apposite for explaining Finnish students' success in PISA 2000, 2003 and 2006.

The text is based on the Finnish PISA 2006 report (Hautamäki & al. 2008) together with information from the Finnish Ministry of Education (www.minedu.fi/OPM/?lang=en), the National Board of Education (www.oph.fi/english/frontpage.asp?path=447), and the Educational Evaluation Council (www.edev.fi/portal/english). Tables and figures are based on PISA 2006 data (www.pisa.oecd.org/). References to these are not marked separately in the text.









KEY FEATURES OF THE FINNISH EDUCATION SYSTEM

In view of the extensive education reforms of Finland in the early 1970s, it can well be said that the foundations for Finnish students' success in PISA were laid already when the parents of the PISA generation began their school careers.

ADOPTING COMPREHENSIVE EDUCATION

Finland's rapid transition from a sparsely populated agrarian society to a quickly developing industrial state in the 1950s and 60s called for radical changes in the education system. Parallel education proved wanting in providing qualified workers and employees for the expanding economy as only a minority of each age cohort received sufficient academic or professional qualifications. Despite the active resistance of the more ardent proponents of the academic establishment and the political right, the common political climate of the 1960s was ready for a radical change, leading to the adoption of comprehensive 9-year education for all. However, unlike in some other countries adopting a similar reform at the time, compulsory education was limited to nine years of basic school or the age of 16, leaving upper secondary education divided into two parallel systems, the general or academic upper secondary schools and vocational schools. Besides, as a concession to the advocates of the parallel system, streaming in key academic subjects was maintained at the lower secondary level, and while most private secondary schools joined the

municipal system willingly, some retained their status while affiliating to the new system to guarantee their economic foundations. Despite the latest reform of 1999, many basic schools are still not really comprehensive but students' school careers include a clear transition and even possibility of school choice between primary and lower secondary schools (grades 1-6 and 7-9, respectively), with classroom teachers in the former and subject teachers in the latter. Many lower secondary schools were actually built on the foundations of former parallel schools for grades 5 to 12, and continued their close affiliation with the respective general upper secondary schools, often with the same teachers teaching at both levels.

The Basic School Law was accepted in 1968 and implemented between 1972 and 1977, proceeding year by year from Lapland to Southern Finland. Concomitant with the basic school reform, large-scale teacher in-service training was implemented to facilitate their transition to teach the whole age cohort through an academically demanding curriculum. Planning of this curriculum was done in a wide-based committee comprising representatives from political parties to university experts on education, and leading

to a very detailed new framework curriculum for the basic school being passed in Parliament in 1970. Furthermore, while the implementation of comprehensive school proceeded from north to south, classroom teacher education was transferred from earlier teacher colleges or seminaries to universities. In view of these extensive reforms, it can well be asserted that the foundations for Finnish students' success in PISA in the 2000s were laid already in the 1970s.

To secure the attainment of the education reforms' goals of equity and high academic standards across the whole country, a strictly centralised steering system was applied, and governmental decrees were implemented at county and municipal level under the governance of the National Board of Education (NBE). Once the basic school had been successfully established across the country, however, a shift in political climate began gravitating towards a more open decentralised education system, leading e.g. to the abandoning of school inspections and the obligatory approval of text books by the NBE in the 1980s. Reflecting this general trend, the new framework curriculum of 1985 allowed for increased freedom at the municipal and school level while still maintain-

ing high cohesion via the common core curriculum and guidelines for classroom hour distribution. The curricular emphasis on basic skills and knowledge, accentuated in mathematics and science with examples from and a foreseen applicability in real life, can be seen to have further ground the future success of Finnish students in PISA with the very similar goals of its framework.

The decentralisation of education continued all through the 1990s, gradually leading to a growing concern of the realisation of the equity goals of the

reform in municipalities struggling with the aftermath of the economic recession of the early 1990s. While the new framework curriculum of 1994 further increased the licence of municipalities and schools in formulating their own curriculum, the Education Law of 1999 established a new evaluation policy with sample based NBE-implemented evaluations in key subjects, obligatory for the sampled schools but also available by fee for others for internal use. Besides, on side of the continuous increase of students enrolled in remedial and special education across

GENERAL WESTERN MODEL	THE FINNISH SYSTEM
<p>Standardisation Strict standards for schools, teachers and students to guarantee the quality of outcomes.</p>	<p>Flexibility and diversity School-based curriculum development, steering by information and support.</p>
<p>Emphasis on literacy and numeracy Basic skills in reading, writing, mathematics and science as prime targets of education reform.</p>	<p>Emphasis on broad knowledge Equal value to all aspects of individual growth and learning: personality, morality, creativity, knowledge and skills.</p>
<p>Consequential accountability Evaluation by inspection.</p>	<p>Trust through professionalism A culture of trust on teachers' and headmasters' professionalism in judging what is best for students and in reporting of progress.</p>

the country, concern for the equally special needs of better performing students has also been a recurrent even if less vocal theme in the discussion concerning Finnish education, especially since the 1990s, even if temporarily palmed off by Finnish students' success in PISA.

Overall, during the last decades, the development of the Finnish education system has largely followed or reflected that of many other Western countries but for two clear differences: Finland has not adopted the strong version of consequential accountability with national testing, and our standards are relatively open to local flexibility and diversity with a strong emphasis on basic literacy and numeracy concurrent with a wide-range education for all.

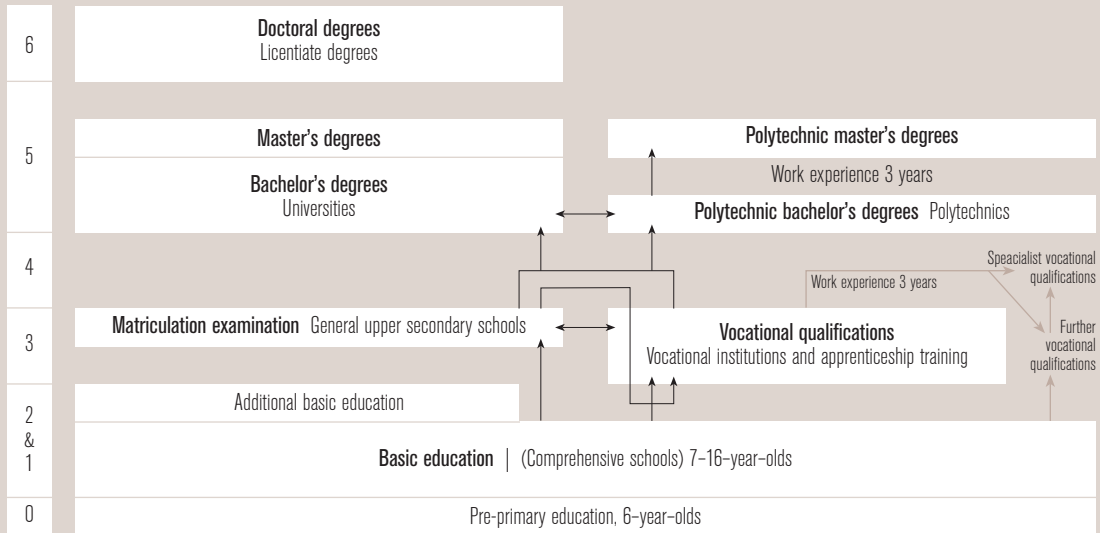
THE FINNISH EDUCATION SYSTEM

Finland, like the other Nordic countries, differs from most countries participating in PISA in the pace in which children enter academic life. Finnish children begin school only the year they turn seven, and there is very little stress on academics in a child's

life before that. Every child has a subjective right to municipally provided day-care, but the percentage of children enrolled is one of the lowest in Western Europe (e.g., in 2006, 63 % of three-year-olds). Only the one-year pre-school or kindergarten class for six-year-olds, established in 1998 to help transition from home or day-care to school, is attended by nearly the whole age cohort. The curriculum for all early education stresses the salient role of play in fostering children's physical, cognitive, social and emotional development, with even the pre-school year aiming at just preparing children for reading and mathematics by the use of age-appropriate preparatory activities instead of outright teaching.

The crux of the Finnish education system is the compulsory nine year basic education. A decree for its final unification to a fully comprehensive school for grades 1 to 9 was passed in 1998, but structurally independent primary and lower secondary schools are still common across the country. Finnish upper secondary education is divided into the two clearly separate systems of academically oriented general upper secondary schools and vocational institutions, which prepare students for direct employment or

THE FINNISH EDUCATIONAL SYSTEM



ISCED-classification

0 Preprimary education | 1-2 Primary education or first stage of basic education |
 3 Lower secondary or second stage of basic education | 4 (upper) secondary education |
 5 First cycle of tertiary education | 6 Second cycle of tertiary education

further education in the polytechnics. Upper secondary education is not compulsory but is attended by over 90 % of the age cohort. Despite the differences in the respective curricula of the two strands, both allow for access to all tertiary education via study-programme specific entrance examinations. Entrance to upper secondary is based on application and basic school certificate, with special requirements for some programmes. In bigger municipalities, general upper secondary schools tend to form a 'ranking order' based on the GPA of the yearly incoming students. Until recently, the majority of students aspired for the academic strand but during the past few years the two strands have begun to appeal fairly equally to students finishing comprehensive education. Drop-out between basic and upper secondary education is around 5 %, and another 5 % drop out from upper secondary, mainly from the vocational schools. Repeating class is very rare in the basic school, and a strong emphasis on remedial and special education from early grades on is a trade mark of the Finnish school system.

Education is arranged and provided by local authorities (mainly municipalities) with the state

sharing its costs by statutory government transfer (in 2006, the state provision for basic education was 55 %). The pre-school year, basic education and both strands of upper secondary education are free of charge for everyone, and in all but the general upper secondary, also text books and other requisites are provided by the school. Free daily school meals are provided for all in both basic and in upper secondary schools without charge, a 60 year old tradition stemming from the early elementary schools, established to entice school attendance and to support learning. Children have the right to attend their nearest basic school but can also apply for a place in any other school with vacant places in their municipality.

For all levels of education, especially in the bigger cities, there also exist some schools or classes with special entry requirements for programmes with special emphasis on side of the common core curriculum, e.g., foreign language schools and language immersion classes from primary level on, as well as lower secondary and general upper secondary schools with a special emphasis on mathematics, science, music, or arts.

EDUCATION AUTHORITY

The Finnish education system is a mixture of state controlled or steered and relatively autonomous elements. **The government** determines the general objectives of education and the division of classroom hours between different subjects. **The Ministry of Education** drafts legislation and government decisions pertaining to education. **The National Board of Education** lays out the concrete objectives and core contents of instruction in the different subjects and is responsible for the national core curriculum with its directive norms for good achievement in each (mark 8 on a scale of 4 to 10). **Local authorities** (generally municipalities) are responsible for the practical arrangement of schooling and for composing the municipal curriculum based on the national core curriculum. Each school, in turn, writes its own curriculum based on both the national core curriculum and the municipal document. The education provider is obliged to evaluate its education services and their effectiveness, and to participate in external evaluations. Teachers and school principals are municipal employees. The former are nominated by school boards in collaboration with the school's principal,

while the latter are nominated by municipal councils, based on a proposition of the respective school board, formed after hearings of the school staff. For most students, the language of instruction is Finnish but at all levels education is also provided in Swedish, the mother tongue of approximately 6 % of the population, and in Sami, Roma and sign language, when needed. The number of basic school age children with immigrant background is about 15 000 (the average age cohort is about 58 000) but their share varies considerably across the country, exceeding 50 % in just one or two schools in bigger cities. Municipalities aim at supporting the integration of students with immigrant background by providing supportive instruction in their mother tongue for students whose knowledge in Finnish does not yet allow for full engagement in regular teaching.

PUPIL WELFARE

In pre-primary and basic education, pupils are entitled to any welfare services they might need for full engagement in their respective education programmes, including general health and dental care for all

students. All pupils are also entitled to special-needs education when necessary. Already before school age and especially during the lower grades, at-risk children and students are screened for possible learning problems to allow for early intervention. Any student with learning or adjustment problems is entitled to remedial teaching in or on side of regular classroom education or to be transferred to special-needs education. When feasible, this is realised by inclusion but can also be arranged in a special education class in regular schools or in a school for special-needs students. An individual teaching and learning plan is made for each student with special needs.

BASIC EDUCATION CURRICULUM

Reflecting the radical change begot by the basic school reform, the first national curriculum for basic education in 1970 was very detailed and the steering system strictly centralised. In 1985, while rewriting the national curriculum in the form of a curriculum framework, the role of municipalities as providers of education was emphasised by instructing them to write their own curricula based on the national frame-

work. In the 1994 reform, even more steering power was delegated to municipalities, and each school was to write their own curriculum, leading to unparalleled collective discussions about the goals and practical execution of education in all schools across country. However, the new decree on classroom hour distribution of 2001 and the new core curriculum of 2004 reinforced anew state control by narrowing the licence of municipalities and schools in planning their respective curricula.

The National Core Curriculum for Basic Education defines the common guidelines along which all municipalities and schools have to arrange their work. It covers education for all students, even the severely handicapped. The main goals and working guidelines are the same for every student, and municipal authorities, school principals and teachers are responsible for implementing them so as to support the maximal learning and well-being of all. In addition to indicating the general and grade-level goals, study contents and evaluation criteria for each subject, the core curriculum introduces the cross-curricular themes intended to permeate all education. It also obliges municipalities and schools to cooperate with parents and with

THE STRUCTURE OF A SCHOOL CURRICULUM

The assessment of pupils and the schools

Basic values, task and objectives



Distribution of lesson hours

Language programme

Knowledge strategy

Cooperation

Cross-curricular themes

Subjects

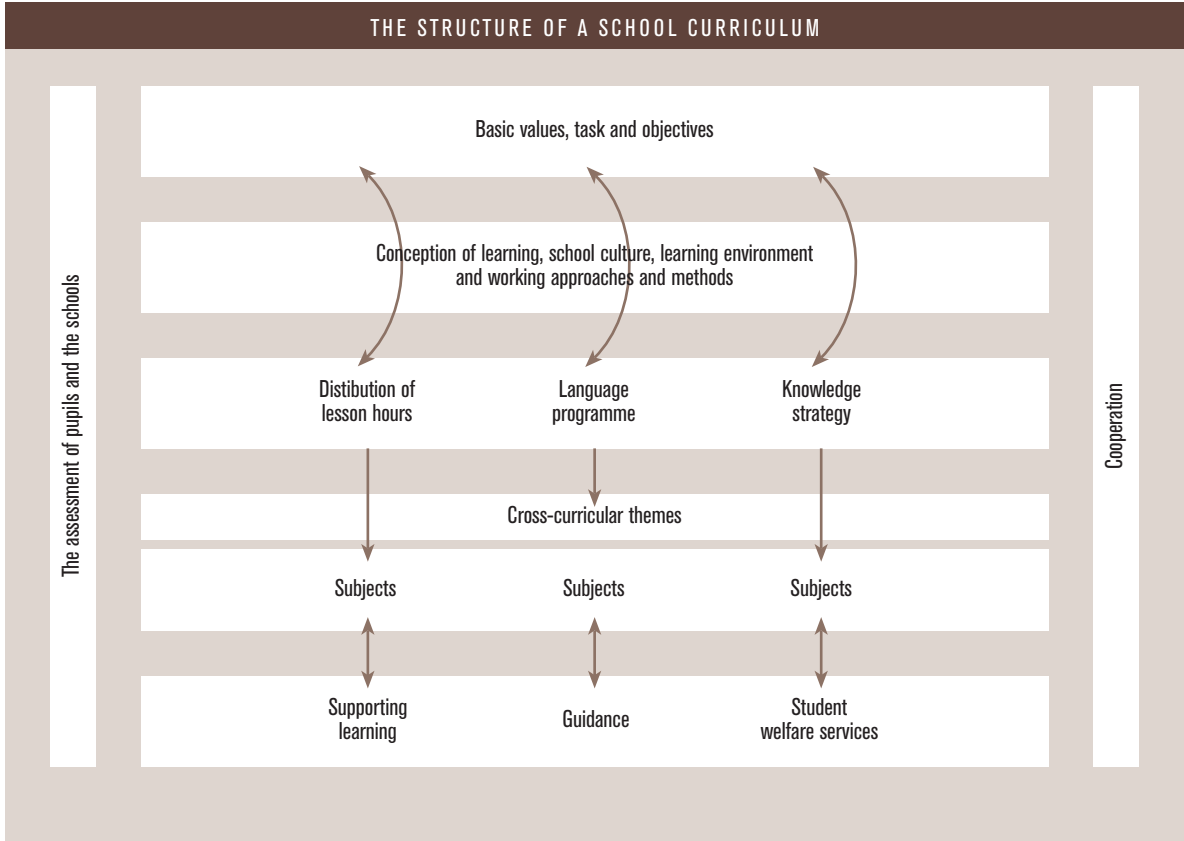
Subjects

Subjects

Supporting learning

Guidance

Student welfare services



municipal social and health authorities in matters of student development and welfare. Likewise, it obliges municipalities and schools to regularly evaluate and continuously develop their own work.

Each municipality draws up its own municipal curriculum based on the national core curriculum, taking into consideration the special circumstances and needs of local children and families. Finally, based on the municipal document, each school writes its own curriculum. This is the central pedagogical document on the basis of which schools draw up their yearly work plans, teachers' work plans and, when needed, individual study plans for special-needs students. Reflecting the national and municipal guidelines, the curriculum is prepared cooperatively by the principal(s), teachers and other school staff. In it, the national goals, study contents and cross-curricular themes are interpreted and translated into the individual school's action plan. It also indicates how support for students with learning difficulties, multicultural education, special needs education, student guidance and counselling, and students' physical and mental well-being is organised and taken care of in the school.

SCHOOL SUBJECTS AND CROSS-CURRICULAR THEMES

The objectives and contents for all subjects and cross-curricular themes are laid out in the national core curriculum. The subjects and their share of the total school hour distribution vary according to grade level but during basic education encompass: mother tongue and literature, second national language (Swedish/Finnish), foreign language(s), mathematics, environmental and nature studies (lower grades), biology and geography, physics and chemistry, health education, religion or ethics, history, social studies, music, visual arts, crafts, physical education, home economics, and educational and vocational guidance. Especially in lower secondary schools, pupils are also offered one or two weekly hours of school-specific courses to choose from.

The cross-curricular themes introduced in some length in the core curriculum comprise: growth as a person, cultural identity and internationalism, media skills and communication, participatory citizenship and entrepreneurship, responsibility for the environment, well-being and a sustainable future, safety and traffic, and technology and the individual. They are to be

implemented in the overall working culture of schools, in actual school subjects, and in special activities, from excursions and school meals to camp schools, clubs and school festivities.

EVALUATION OF AND ASSESSMENT IN BASIC EDUCATION

Reflecting international tendencies, evaluation has become the focal steering tool also of the Finnish education system after the decentralisation of education since the late 1980s. Educational legislation defines

the function of educational evaluation as supporting the development of education and improving the conditions for learning (Act on Basic Education 1998). Municipalities and schools are obliged to evaluate their functioning and the instruction they provide by self-evaluation and by participating in external evaluations. The aim is to steer municipalities and schools in developing their own work and to supply data for the continuous development of education and learning at the national level. Evaluation is also seen to have an important social and political function in enhancing the realisation of equity in the Finnish education

CHANGE OF EDUCATIONAL STEERING SYSTEM

Situation in 1970s and 1980s →

Centralised control and decision-making

- Centralised curriculum
- Long-term plans
- Budgeting based on expenditures
- External evaluation: inspections

Situation in 1990s / 2000

Devolution of power

- Self-governance
- School-based curricula
- Distinctive educational profiles of schools
- Self-direction and self-regulation
- Learning organisation as a mode institutional structure
- Self-evaluation and own control
- Performance-based funding

system (the parliamentary committee on education 3/1998 – HE 86/1997).

In Finland, the **Ministry of Education** formulates the overall strategy for educational evaluation. External system level evaluations are administered by the **Education Evaluation Council** (www.edev.fi/portal/english), an independent expert organisation working in connection to the Ministry of Education. Its evaluations and evaluation development work cover a wide range of issues from regional effectiveness to remedial teaching and student welfare services, from issues regarding specific levels of education to thematic evaluations such as utilisation of information technology in education. National assessments of curricular outcomes in general and vocational education are carried out by the **National Board of Education** (www.oph.fi/english/). These comprise alternate yearly assessments of mathematics and mother tongue at the end of basic education (grade 9), occasional assessments in other subjects and at other grade levels and, lately, longitudinal assessments in key subjects.

All evaluation and assessment aims primarily at providing reliable up-to-date information on the context, functioning, results and effects of education

to safeguard the realisation of educational equity and to support the local education administrations and schools in developing their services. In addition, the NBE assessments aim at providing subject-specific data for amending curricular objectives and requirements. To reflect these goals, assessment in basic education is solely based on representative samples of schools and students, and there are no national high-stakes evaluations or testing before the matriculation examination at the end of general upper secondary education.

ASSESSMENT OF LEARNING IN SCHOOLS

The lack of national high-stakes assessment in basic education does not mean that Finnish students don't face exams during their education. It only means that control of learning is left to schools and individual teachers. Teachers either compose their own exams based on the learnt content or they lean on the exam-blueprints of teacher's materials accompanying most text books, covering the contents of each study unit. Subject teachers' associations also provide pre-

made exams with access to the accumulating normative data to assist in providing guidelines for more uniform marking in view of the comprehensive school certificate used for entrance to the upper secondary school of one's choice.

As a result, students' attainment in most subjects will be assessed numerous times all through the nine years of basic education, despite the actual lack of testing in the high-stakes summative meaning of the term. In fact, one of the reasons Finnish students give for 'not liking school' is exactly the multitude of exams they feel they have, and probably even have at least compared to their Nordic peers.

In addition to the recurrent exams measuring students' curricular attainment, specific normative tests are widely in use in the early grades to screen students for possible learning difficulties in reading, writing and mathematics. These are administered by special teachers or school psychologists, and the results are used for planning possible need for and allocation of remedial and special education support and resources.

TEACHER EDUCATION

Concurrently with the implementation of the basic education reform, teacher education was thoroughly restructured in 1975 as part of a comprehensive university degree reform (FYTT-committee 1972). The transfer of classroom teacher education from teacher colleges to universities entailed a change toward research-based teacher education by consolidating the foundations of teacher education in academic research and by training teachers as commencing researchers, capable of searching for and applying scientific findings in their own work.

Both classroom and subject teachers attain master's degrees (300 ECTS); the former in education, the latter in their respective subject(s). Besides consolidating their professional qualifications as a teacher, this allows and prepares all teachers to continue academic studies to doctorate level. The academic status of classroom teacher education has undoubtedly contributed to the continuous popularity of teaching profession in Finland, as well as to the trust parents feel towards their children's teachers and the school in general. As a consequence, only 10 % to 15 % of aspiring candidates are accepted

into classroom teacher education programmes in the eight universities offering them, allowing the departments to apply rigorous screening to select the most adept and motivated students. The difficulty of acceptance has also acted as a signal for future applicants that a career in teaching can be intellectually and socially interesting and rewarding. However, as in many other countries, the situation is not so bright concerning subject teachers, and in fields like science and mathematics the number of applicants does not allow for similar rigorousness in screening, even if also they go through a special process of selection including an interview.

The Finnish classroom teacher education qualifies for teaching most subjects to grades 1 to 6, and it is common in Finland for the teacher to teach the same class for at least two but even four consecutive years. As part of their degree, many classroom teachers also attain qualifications for teaching one or two subjects for grades 7 to 9, even if many of them only use the qualification for teaching the subject(s) for other classes in their own schools. Subject teachers earn qualifications for teaching their respective subject(s) for grades 7 to 9 in the comprehensive

school and in the general upper secondary schools. These are not class-level-based but while grouping each incoming student body to class-like groups for social reasons, offer an open array of obligatory and elective courses, of which each student must study a minimum of 75 courses of 38 hours each before matriculation, at his or her personal pace, within two to four years.

Subject teachers may opt for a special programme and carry out their pedagogical studies concurrently with their studies in the major subject(s), or they can decide on a career as teacher later and carry out the pedagogical studies after their studies in their respective subjects. Subject teachers usually write their master's thesis in their major subject but may also do it in the didactics of the respective subject.

Continuing education centres at universities and the NBE offer courses and programmes both for teachers' further professional development and for prospective school principals. Teachers' actual access to in-service training varies across the country, however, due to regional differences in supply and in municipalities' possibilities for and policies in providing time for in-service education.



$$\frac{3.40}{5} = \frac{3.40}{5} = \frac{3.40}{5} = 24$$

kerdo



lankulla





FINNISH STUDENTS' RECURRENT SUCCESS IN PISA

Finnish students have performed at a consistently high level in all domains in PISA 2000, 2003 and 2006 with an exceptionally small share of students at the lowest proficiency level and relatively small differences between schools across the country.

The three PISA studies of 2000, 2003 and 2006 form a full cycle with each of the three literacies having been once at the centre stage (For a more comprehensive account of the PISA studies see OECD 2001, 2004, 2007. For a more comprehensive account of the Finnish PISA results, see Välijärvi & al. 2003, 2007; Hautamäki & al. 2008). At each cycle and in all domains, Finnish students' attainment has been among the best both in terms of the mean level of attainment and in terms of student variance, indicating an education system that seems to have succeeded very well in providing the great majority of young people the competences deemed valuable for all in today's world (OECD 2007a).

HIGH OVERALL PERFORMANCE WITH SMALL VARIANCE

Finnish students' good performance in PISA 2000 Reading literacy was not a surprise as Finnish students have performed well also in earlier comparative studies on reading since the IEA's 1991 PIRLS study. However, few could have predicted that Finnish students would also be among the best in the two 'minor' foci of PISA 2000, mathematical

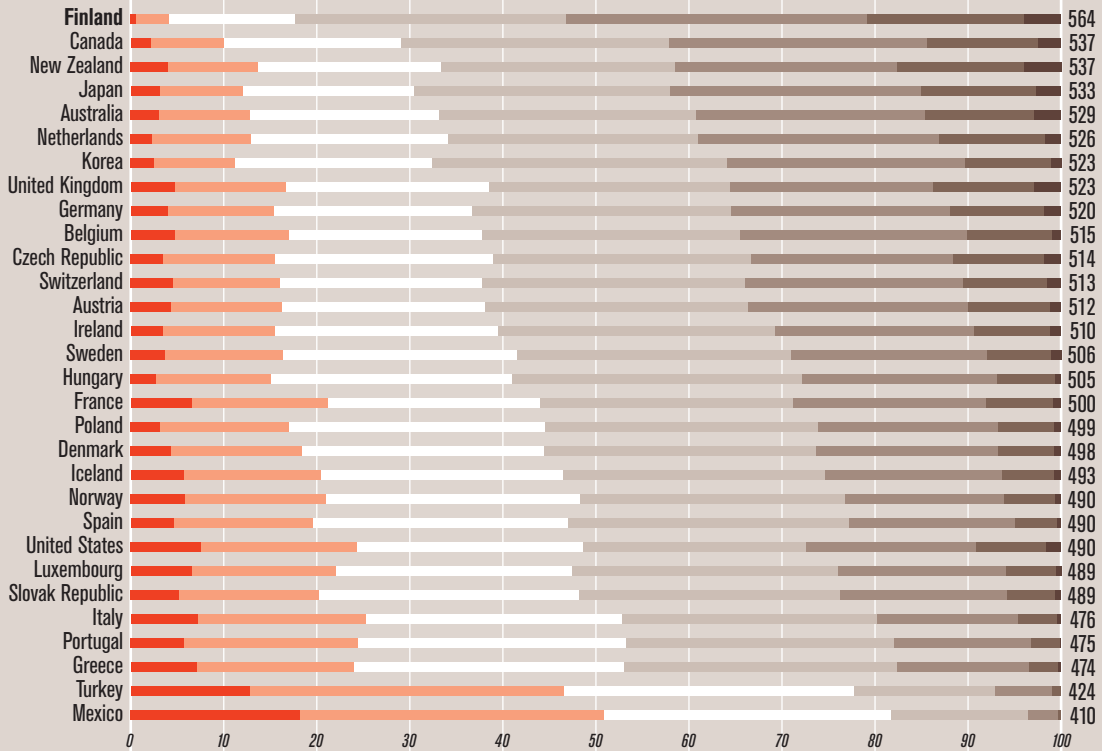
and science literacy. The high mean scores of 546, 536 and 538, respectively, for reading, mathematics and science (OECD mean 500), were not only caused by the share of top-performing students being one of the highest among the participants but also by the number of students performing below the level deemed necessary for full participation in today's world being among the smallest, attesting to the success of the Finnish comprehensive school in equalising student variance. The only major deviation of this was the significant difference in Finnish girls' and boys' scores in reading literacy. However, while it was the biggest among all participating countries, it did not prevent also the Finnish boys from being the best readers among the boys of the participating countries.

The same high level of performance and uniformity of results have since been repeated in PISA 2003 and PISA 2006, regarding both the alternate major domains of mathematical and science literacy, the respective minor domains, and the special component of problem solving in PISA 2003. At each cycle, the performance of Finnish students has been among the best and, except for the chronic gender difference in

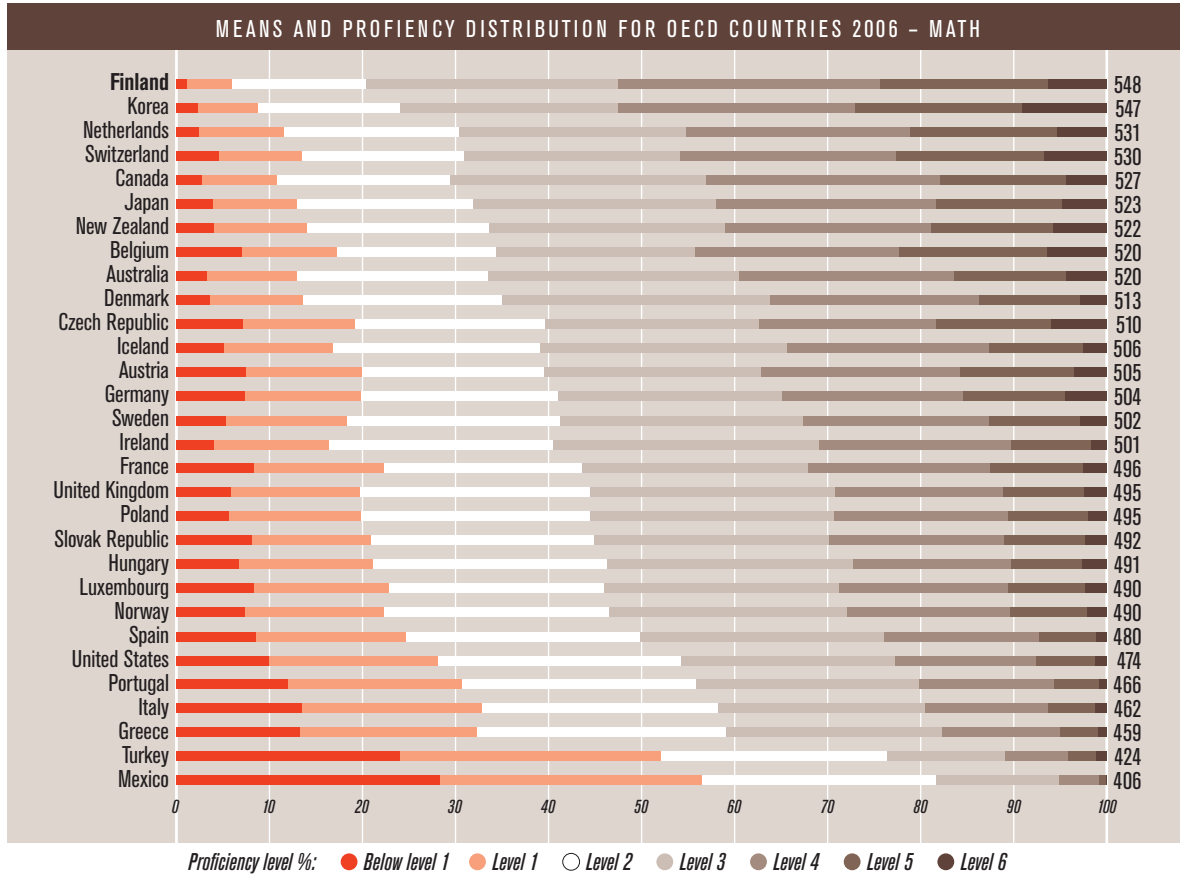
reading repeated also in the NBE studies, the results have been among the most even in terms of both between-student and between-school variance.

This small variance, shared with the other Nordic countries, seems, however, to be caused at least in part by the timing of PISA at a point when students are still in the comprehensive school with its shared curriculum and mores. If Nordic children would begin school at age six as is done in many other countries, they too would have proceeded into upper secondary level in time of PISA. Regarding the dual model of Finnish upper secondary education with two types of schools with their distinct student bodies and internal cultures, there is little reason to doubt that the Finnish in-between-school differences would much differ from those of other countries with an otherwise fairly similar educational structure but for the age of entering school. This does not mean, however, that conclusions regarding the impact on social equity and capacity building of a comprehensive vs. a dual model of education, made on the basis of PISA, would not be warranted from the policy point of view.

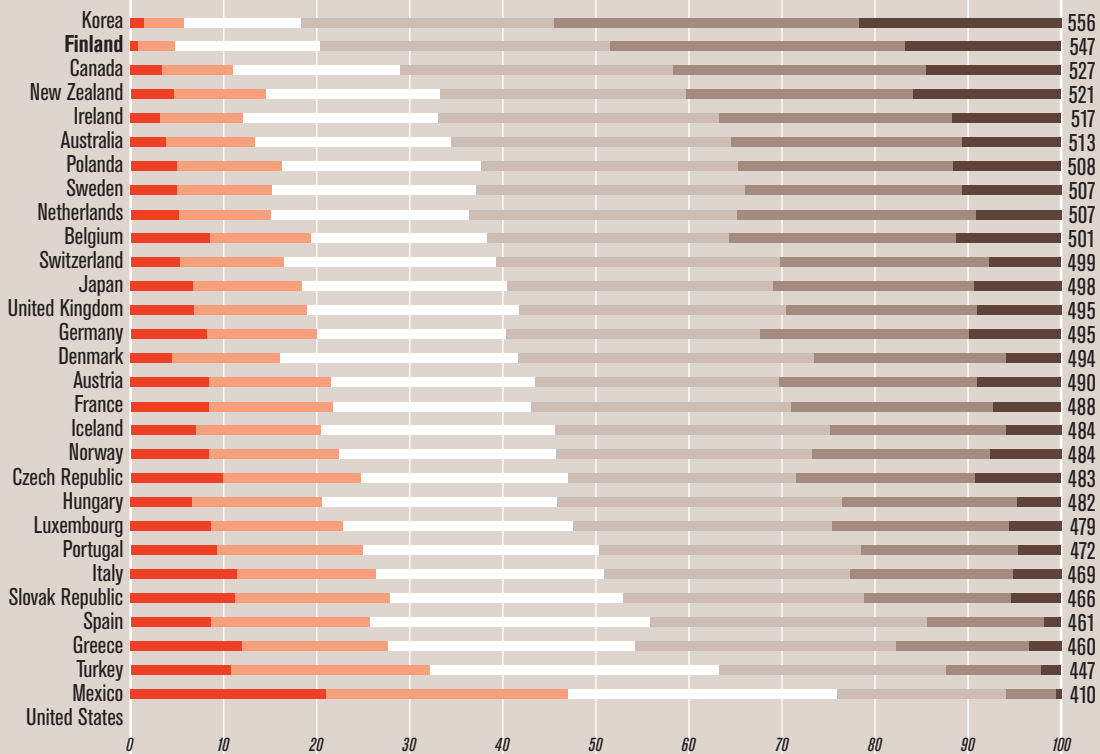
MEANS AND PROFICIENCY DISTRIBUTION FOR OECD COUNTRIES 2006 - SCIENCE



Proficiency level %: ● Below level 1 ● Level 1 ○ Level 2 ● Level 3 ● Level 4 ● Level 5 ● Level 6



MEANS AND PROFICIENCY DISTRIBUTION FOR OECD COUNTRIES 2006 - READING



Proficiency level %: ● Below level 1 ● Level 1 ○ Level 2 ● Level 3 ● Level 4 ● Level 5

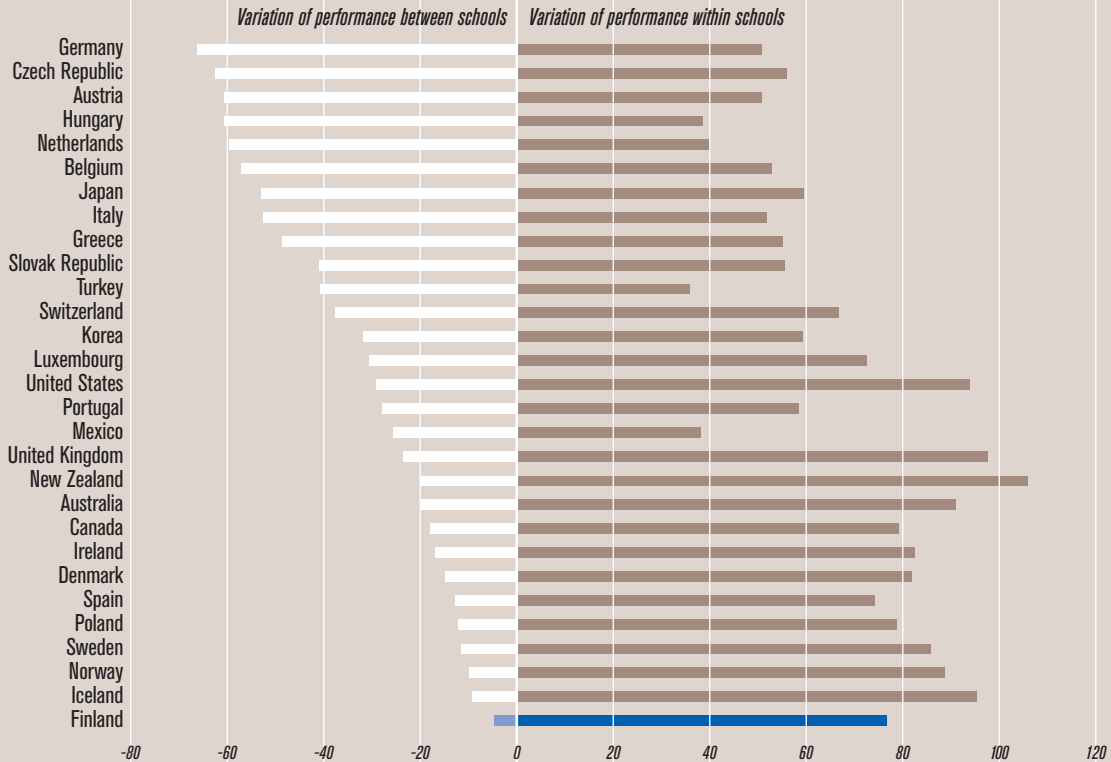
The most prominent feature of Finnish students' performance in PISA is its recurrently high level combined with small variance. The first can be seen in the distribution of Finnish students through the proficiency levels, with a relatively small share of students at the lowest levels and a sizeable one at the two uppermost levels. The latter can be seen in the small overall variance and the very small between-school variance, both indicating the low impact students' social or economic background has on their performance compared to that in many other countries. Some of this uniformity is due to societal factors characteristic of Finland as a relatively young Nordic well-fare state, and some to the implementation of PISA before the split-up of upper secondary education. But some can surely be seen to testify to a successful implementation of the equity goals of the basic school reform.

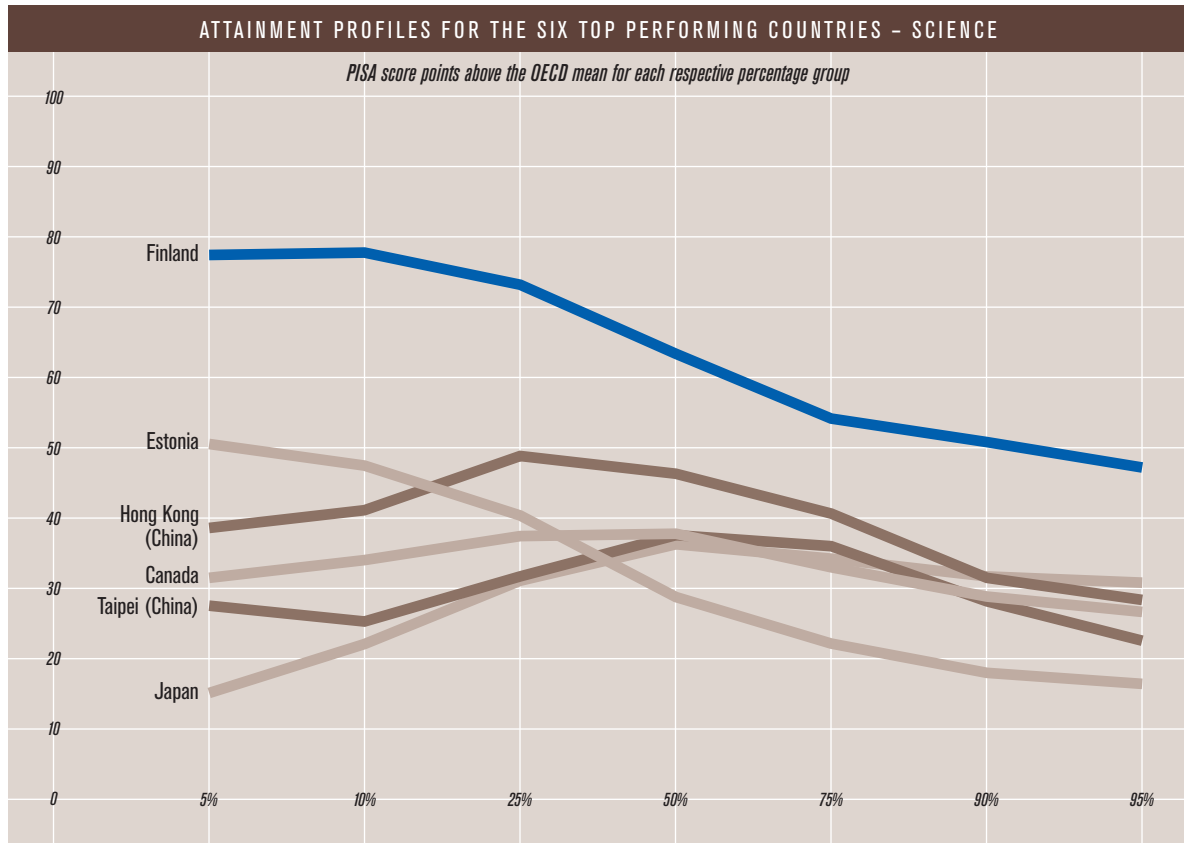
Finnish students are not the only ones to have performed well through the different cycles and literacy domains. Due to PISA having attracted an ever growing number of participants for each cycle, and to only reading literacy having been measured with appropriate anchor items through all three cycles,

no exhaustive comparisons can be made. Incomplete as the comparisons might be, however, already the current data show different possible profiles for high overall performance. This could be seen in the relative distribution of students across the proficiency levels, presented above for all domains in 2006 for the OECD countries, but can be highlighted by looking at students' attainment by country-specific percentile groups (PISA score points for the different percentile groups in each country with the respective OECD group mean set at zero).

Despite the relatively high correlations between the three literacies at both OECD and country level, the country-specific attainment profiles differ not only by country but also by domain. Among the best performing countries, Finland stands out by its relatively better weak performers in all domains (66 to 91 score points above the mean for the lowest 5 % of students while the top 5 % surpass the OECD mean of its group only by just 31 to 47 score points) whereas this is typical for the other countries only in reading, if even that, and for Estonian students in science literacy. The differences in profile are most

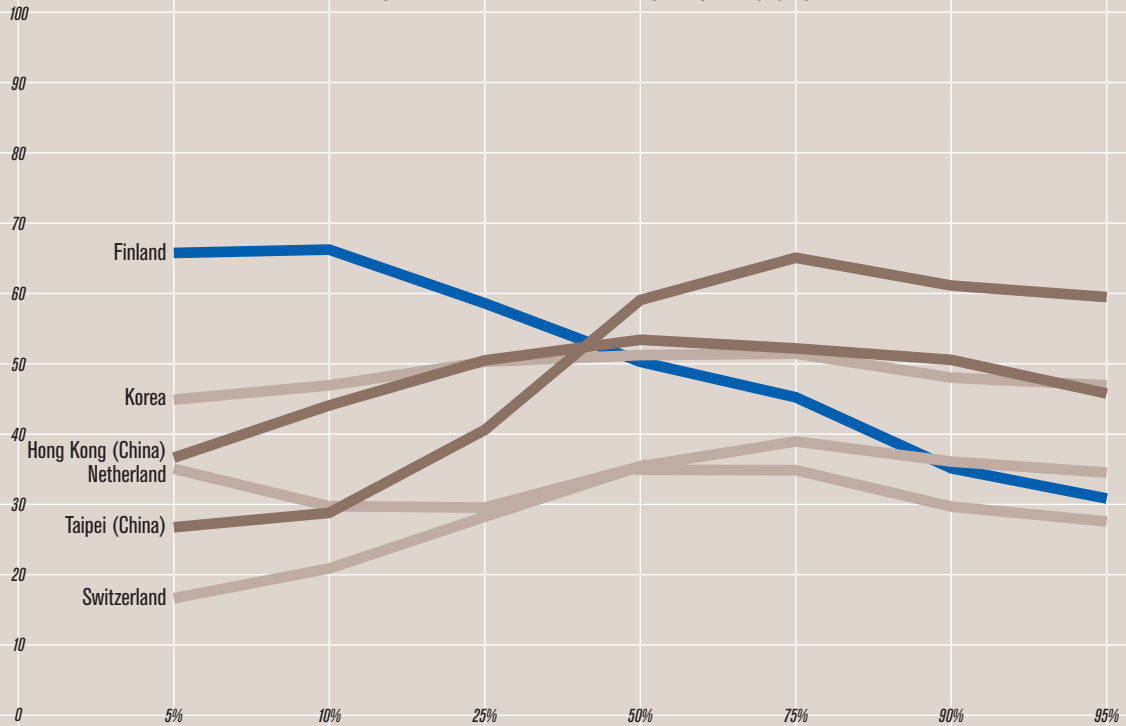
VARIATION OF THE PISA 2006 SCIENTIFIC LITERACY SCORES

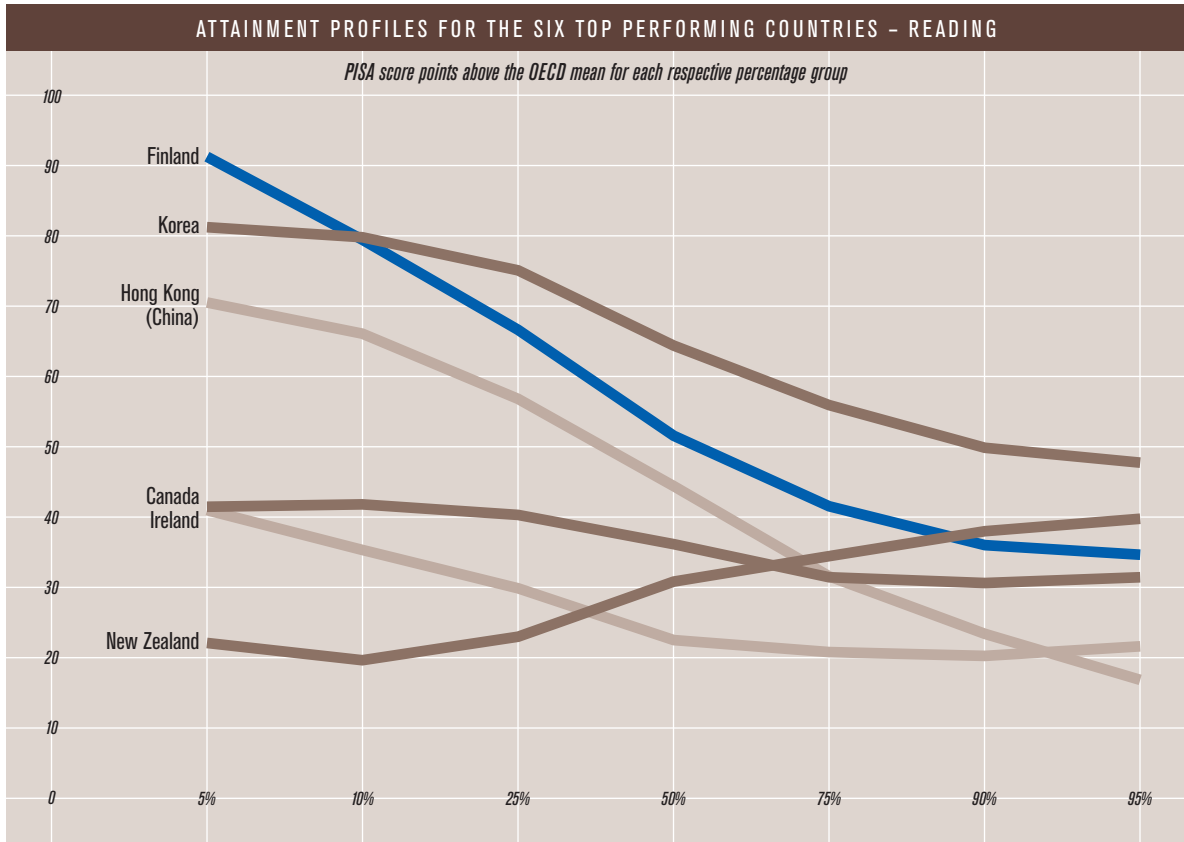




ATTAINMENT PROFILES FOR THE SIX TOP PERFORMING COUNTRIES – MATHEMATICS

PISA score points above the OECD mean for each respective percentage group





prominent in mathematical literacy where there clearly are three paths to excellence: the strong weak performers of Finland, the exceptionally good top performers of the Chinese Taipei and the uniform (relative) excellence of students of all levels in Hong Kong and in South Korea.

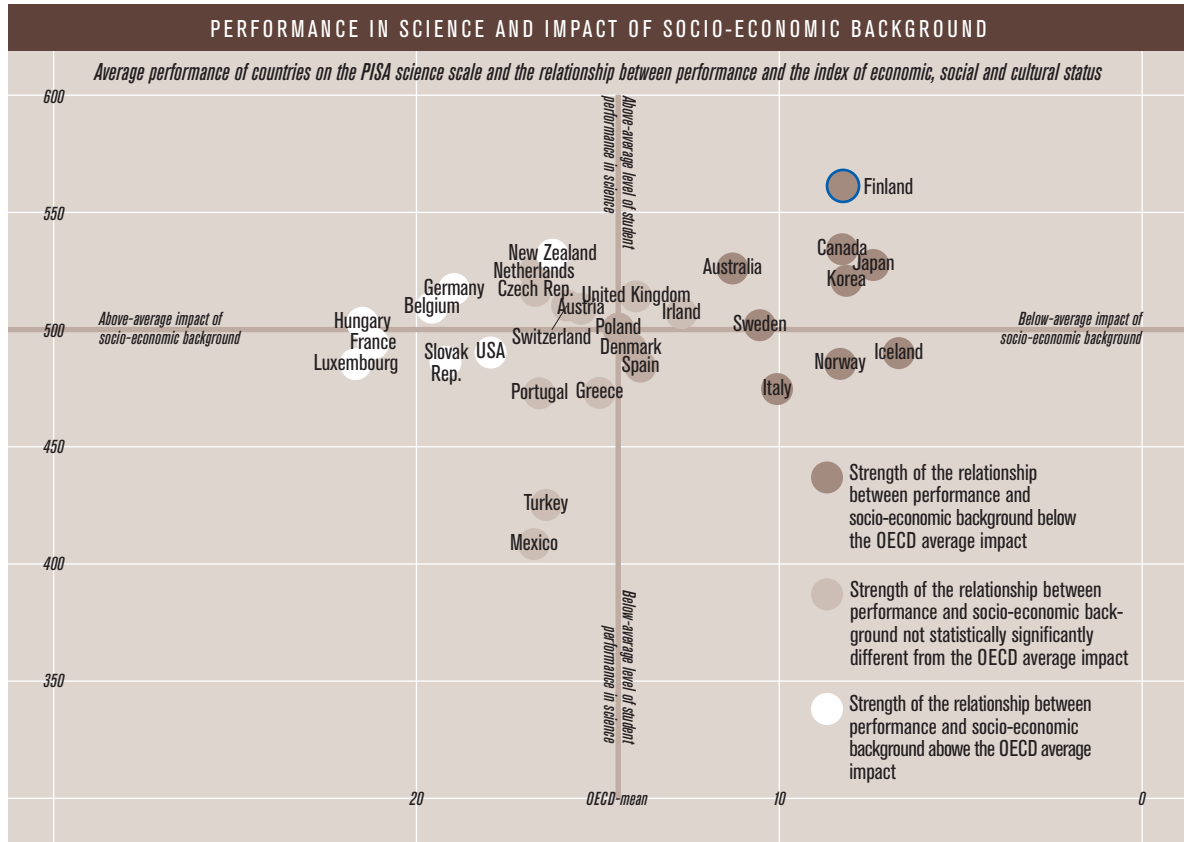
SAMPLE

In PISA 2006, all 155 schools in the initial Finnish sample made by ACER participated in the study, ensuring the maximum representativeness of the sample at school level (the OECD average was 92 % while even in some of the other top-performing countries schools' acquiescence for participation was much lower, e.g., Hong Kong-China 69 %, the Netherlands 67 %). The Finnish sample of 4714 students covered 93 % of the eligible population (OECD average 89 %). In all Nordic countries, the average within-school student exclusion rate at 2.0 % - 3.3 % was higher than the OECD mean of just 1.6 %, even if still within acceptable limits. Combined with school level exclusion (under 2 % for all top-performing

countries), the overall exclusion rate in the Nordic countries at 3.5 % to 4.5 % was clearly above the OECD average of 2.7 %, possibly reflecting the common practice of inclusion regarding special-needs students in the Nordic comprehensive schools.

SOCIAL EQUITY

The role students' socio-economic background plays in their access to and success in education is a key index for educational equity. For home to have no impact on a child's attainment at school or later in life is hardly a goal to strive for, as it would indicate that education pays no long-term dividends. This does not mean, however, that striving to minimise differences both in opportunities and in attainment between children coming from different social or economic background should not be one of the overriding goals of education in its quest for equity and building human capital. In PISA, the effect of ESCS (index for economic, social and cultural status) is analysed at three levels: students, schools and study programmes. In Finland, the impact is low compared

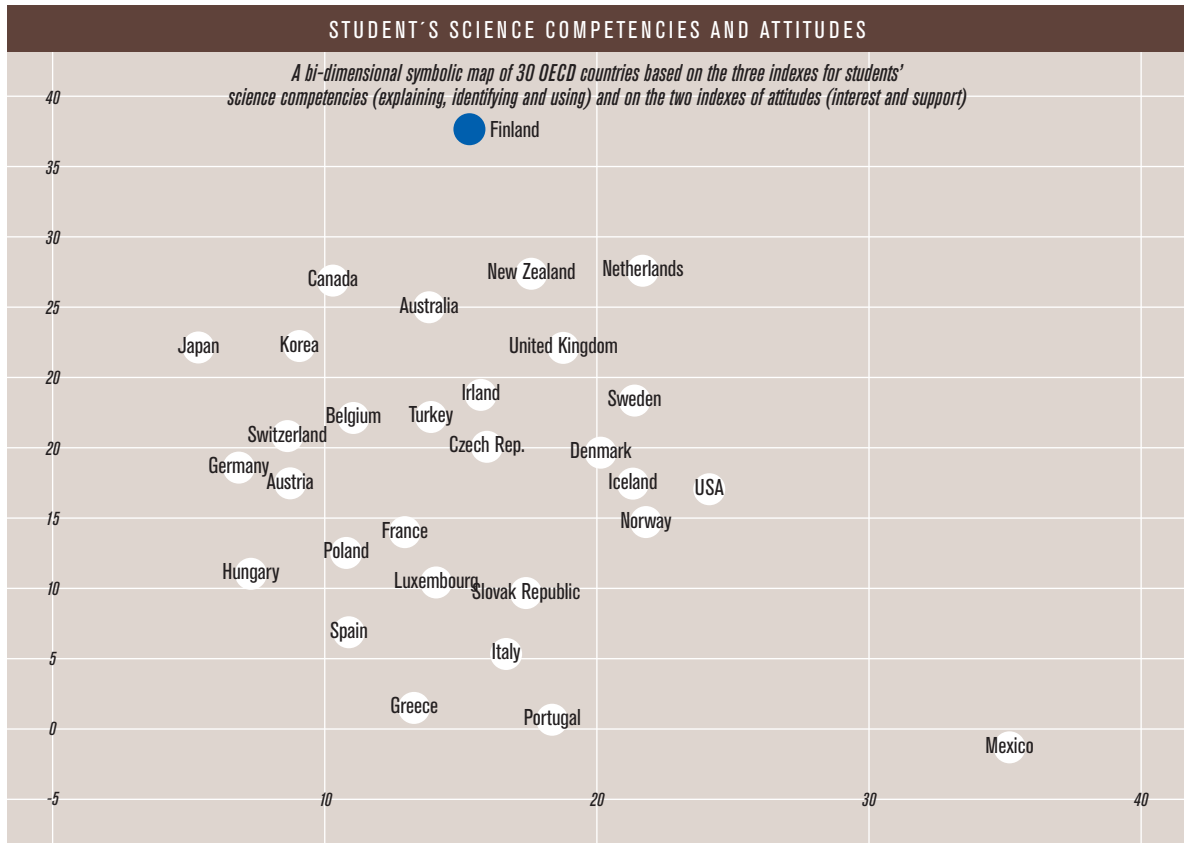


to the OECD mean for both students and schools, while study programmes have no effect in Finland as there are none during basic education. Part of the low socio-economic variance is due to the relative homogeneity of the Finnish society, but part is undoubtedly explained by success in implementing the equity goals of the basic school. After all, one of the main reasons leading to the basic school reform in the late 1960s was the equity-problems related to the parallel school system in terms of social mobility and growth of human capital.

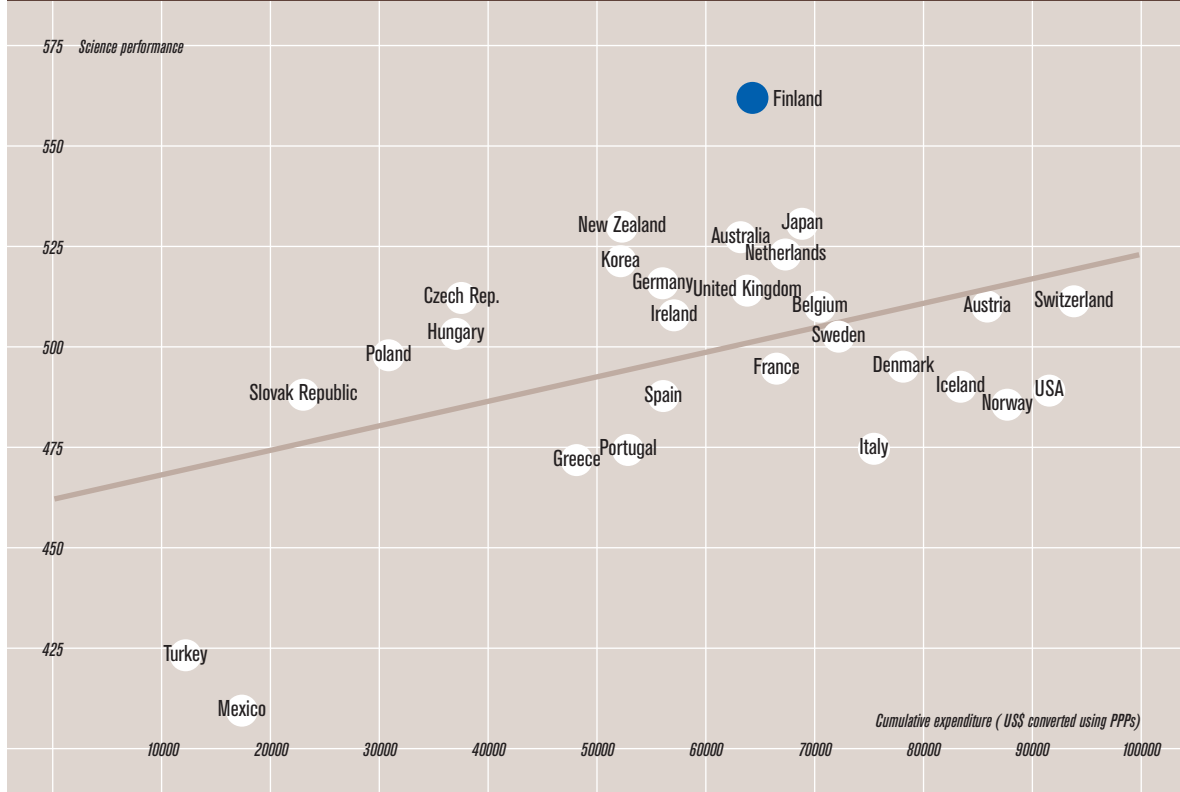
INTERESTS AND ATTITUDES

Finnish students seem to pose a dilemma for comparative education research in terms of the importance accorded to motivation and interest on learning. While Finnish students have performed among the top in PISA for three times in a row in all domains,

they have regularly come out in international studies as less interested and less motivated than students in most other countries, and have sometimes even been interpreted as just “not liking school”. The apparent paradox of these non-motivated high-performers does not get support from correlational analyses at the national level where questionnaire data and students’ performance indicate a clear connection between the two. Could the paradox be partially due to just different cultural habits in answering questionnaires? Might it be that for the Finnish students it is not always necessary to totally agree with a statement given to them to answer? In any case, taking simultaneously into consideration students’ attainment in the different dimensions of scientific literacy of PISA 2006, their science-related attitudes, and the relations between these two, a new picture emerges with the Finnish students finding their place not so far from those of many other countries but for their relatively superior performance.



SCIENCE PERFORMANCE AND NATIONAL EXPENDITURE



NATIONAL INVESTMENT IN EDUCATION AND STUDENT PERFORMANCE IN PISA

Overall, students' attainment in PISA reflects a nation's expenditure in education, making some comparisons unfair for economically less developed nations. Among the OECD countries, however, Finnish students' performance clearly exceeds expectations based on the fairly average level of expenditure in education in Finland, indicating that an education systems' effectiveness is not only tied to expenditure.









HOW TO EXPLAIN FINNISH STUDENTS' GOOD PERFORMANCE

The roots for the Finnish success in PISA can be searched for in the history and rapid development of the Finnish well-fare state as well as in the bold education policy of the past forty years with its emphasis on educational equality.

The success of Finnish students in all literacy domains of PISA in the past three cycles has not only raised acknowledgment abroad but has also raised perplexed questions in Finland. How to understand or explain that the Finnish comprehensive school, with its ever expanding need for remedial teaching and student welfare services, would parallel or outclass even the most rigorous Far-Eastern and the very best European and Anglo-American education systems? Efforts to unravel the question have directed toward at least two very different directions. One has to do with general socio-political and historical factors, the other with the Finnish education system and its corollaries.

SOCIETAL REASONS

The societal reasons are tied to the short history of Finland as an independent nation, and the salient role the Finnish language, education and culture had in the formation of national identity in the mid-1800s, in a country which had never been a nation-state and still was not, where the upper class talked in a tongue foreign to the peasant majority, extracting a mean

living from the barren earth with its 56 000 lakes, both frozen much of the year. The late emergence of Finnish as a literary language is attested by the 'Seven brothers' by Aleksis Kivi, the first novel in Finnish, published only in 1870. One of the key episodes in the novel depicts the escape of the protagonists, seven brothers in the heartlands of Finland, from the provisional school of an itinerant clergyman, stopping in a nearby village to teach local men to read the catechism to receive church confirmation, required for entering matrimony. Maybe congruent with the apparent paradox of the well-performing but 'unmotivated' and 'negative' Finnish students of international comparisons, the brothers soon returned to the school despite the ensuing punishment, and continued to learn their ABC's.

After the national awakening, Finland quickly consolidated its identity as a nation state despite its status as a Grand-Duchy in the Russian Empire until independence in 1917. In 1863, the Finnish language gained an official status on side of Swedish, and the rapid political, economic and cultural development gave rise to a growing need for qualified workers and civil servants, contributing to the central role educa-

tion was to gain in social and economic advancement. After that, supported by relatively autonomy as part of Russia, including its own Parliament, Finland began to develop as an aspiring forest industry-driven country with a slowly growing Finnish-speaking upper and middle class. However, due to waves of political repression in the early 1900s and a full-blown civil war after the declaration of independence, development was slow. Despite the first decree on basic education being adopted in 1866, a four year elementary education was made compulsory by law only in 1921, and was fully functional across the whole country only by the 1950s. As it is, Finland differs from most developed Western countries in the late timing, great speed and considerable intensity of its transition from a poor agrarian country to a modern knowledge-based economy, all within the past fifty to sixty years (Ingold 1997).

Today, Finland is a wealthy Nordic welfare state with zero illiteracy, low infant mortality, high productivity and relatively high taxes. A major aspect of societal income distribution is investment in education which is free-of-charge from the pre-school year at age 6 to tertiary education, and accessible to all regard-

less of language, ethnicity, gender, or social status. Basic education is a combination of centralised and decentralised management and the private sector is very limited due to both historical reasons and a general trust in the high standard of the municipal schools. However, the long history of central governance before the basic school reform, together with the unified university-level teacher education and the largely secularised but still prevailing Lutheran work ethic, advocating hard work and persistence as a key to success, might be central factors in explaining the small urban-rural and regional differences in the Finnish PISA results.

REASONS DIRECTLY RELATED TO EDUCATION

On side of the historical and societal factors supporting the acceptance, high regard and actual value of education for social advancement and mobility, the most salient explanation for Finnish students' good performance in PISA might simply be the high congruence between the objectives of PISA and of the

Finnish basic school reform. This congruence is not limited to the level of the general objectives of teaching (Finland) or assessment of (PISA) knowledge and skills applicable in real world situations, but even a cursory reading of the PISA Framework on the one hand (OECD 2007a) and the Finnish curricular documents and Finnish text-books on the other, show a remarkable goodness of fit (c.f. Lavonen 2008). This explanation seems to get support from changes some countries have made in their science and mathematics curricula or text-books since PISA has gained the status of the number one international comparative study in education. Whether this will lead to better achievement in these domains in such countries remains to be seen.

Another factor contributing to the uniformly high performance of Finnish students seems to be the relative similarity of the tasks in all domains and the salient role of reading in all of them. This congruence does not concern only Finland, and despite some variation among countries in the relative performance of their students in the three domains, good reading skills are typical for top performers in all domains.

From among the top ten countries in reading literacy in PISA 2006, only Irish, Polish and Swedish students do not also figure among the top ten in either science or mathematics, while five figure in both. Naturally, this might be just an indication of an exceptionally high overall level of attainment in some countries. School marks collected in Finland as a national option in PISA 2006 indicate, however, that at least in Finland, students' attainment in reading, math and science at school varies significantly more than their attainment in the respective literacy domains in PISA (Kupiainen & Pehkonen 2008). And while the difference in mathematical literacy between Finnish boys and girls was 11 score points, it increased to 58 points when students' score in reading was taken into account.

The lack of high-stakes testing might also be a positive factor contributing to the Finnish success in PISA. Despite municipal and school-level resistance toward the recent expansion of governance by evaluation, Finnish schools have reacted positively to participation in PISA, and have apparently succeeded in conveying this positive attitude to their students.

Combined with the opportunity to be part of something which procedurally resembles the matriculation exam at the end of general upper secondary school but poses no need for preparation and even allows skipping a few regular classes, Finnish students clearly seem to be ready to apply their best knowledge, skills and perseverance in the PISA tasks. The relatively low percentage of non-answering can be seen as a good indicator for this, with the share of missing responses in PISA 2006 for the different domains in Finland at 3 % to 6 % compared to the OECD means of 8 % to 15 %.

One factor pertaining to the high level and uniformity of Finnish students' performance is the timing of PISA while students are still in the comprehensive school. Based on the results of comparable countries with a parallel system of education there seems to be little reason to assume that Finnish students in the academic strand would have performed much better had the parting to general and vocational upper secondary already been in force, but there is every reason to believe that students in vocational schools would have been less motivated to work on the tasks

in the middle of their professional training than they are now in the comprehensive school with its daily requirements not too far removed from the world of PISA.

REMEDIAL AND SPECIAL EDUCATION & STUDENTS WITH IMMIGRANT BACKGROUND

PISA has revealed clear differences in grade repeating policies even among countries which relatively similar education systems. Especially countries with comprehensive schools with a neighbourhood school principle and inclusion policy face acutely the problem of how to manage student-level variation. In some, like France and Portugal, the problem has been solved by a fair share of students repeating grades every year while in Finland, grade repeating is very rare during basic education (about 2% of pupils, compared to over 40 % in France).

The practice of non-repeating was adopted in the comprehensive school based on the principle of 'education for all'. To meet the policy of non-repeating,

schools are obliged to provide special support to all students who are not able to follow and profit from regular classroom teaching. In most cases this is realised by remedial teaching in the regular classroom or in temporary small groups. If seen to best serve the special needs of the student, he or she may be assigned the status of a special-needs student via professional assessment and be placed in a special education class in his/her initial school or in a special school. In the course of the past fifteen years, the share of students allocated to remedial or special-needs education has increased manifold, with 27 % of students having received some form of special support for their learning during basic education.

If attainment in PISA is to be interpreted as an indicator of the success of educational policy decisions concerning the way student variation is met at schools, the excellent relative performance of the weaker Finnish students in all domains could be seen to support the Finnish policy of early remedial teaching and special education. In view of the relative homogeneity of the Finnish student body the conclusion might be premature, however. In all countries, one of

the most salient and enduring problems in education is the school's (in)ability to meet and provide for students for whom the language of the school is not the same as the one spoken at home, and whose family traditions and values might differ considerably from those of the surrounding society. As students with immigrant background form a very small minority of the Finnish 15-year-olds participating in PISA 2000, 2003 or even 2006, the composition of the Finnish lower end of proficiency differs considerably from that in many other countries in comprising a far greater share of native-speaking students. Accordingly, the time might not be ripe yet to see whether the Finnish system will succeed any better in meeting the challenge of non-native speakers than others have done.

FLUENT READERS

The objective of PISA is to measure students' readiness to apply in real life situations knowledge and skills learnt at school (OECD 2007a). Due to the technical constraints of an international large-scale study, however, what is measured in each domain is, in the end, measured with paper-and-pencil tasks, relying on written instructions which students have to read and understand in letter as well as in intention. The effort to emulate real life might, in fact, be a factor further removing the actual tasks from the general objectives of PISA by necessitating lengthy descriptive texts to create the 'real life' contexts for the tasks. As it is, the tasks are imbedded in a multitude of text to be read just to find the problem to be solved, leading to a high interconnectedness of students' proficiency in the three domains. Accordingly, factors pertaining to good reading skills can be seen salient to explaining students' success also in the other literacies measured in PISA, in Finland as elsewhere.

The Finnish language and the central role of reading in daily life are factors which have been

often brought up when looking for explanations for Finnish students' fine performance in comparative studies on reading literacy or comprehension (PISA, IEA). The phonetic character of Finnish language makes decoding easy, and beyond the lower grades, dictation is common only in foreign language classes. As it is, after children learn to decode the language which 'is spelled as it is pronounced', they soon learn to be ever more fluent readers due to the subtitling of all foreign language TV-programmes and films. Combined with the long-standing tradition of newspapers and magazines subscribed for home delivery, a well-functioning network of free libraries, and zero illiteracy among native adults, Finnish children are truly embedded in written language from birth on.

However, as students performing at the top in PISA reading literacy come from countries with very different languages (e.g. Korean, English, and Chinese), the phonetic character of the Finnish language or the non-dubbed TV programmes should not be seen as the only factors explaining Finnish students' success in PISA.

SCIENCE AND MATH LITERACY

While Finnish students' success in reading literacy in PISA 2000 was not exactly a surprise, their equally good performance in the minor domains of mathematical and science literacy did definitely exceed expectations. An even greater surprise was the success of Finnish students in PISA 2003 with mathematical literacy as the major domain and problem solving as a new extension to the earlier three literacies. The success was not received with unequivocal contentment, however, but raised an impassioned discussion between the representatives of the comprehensive school on the one hand and those of university mathematics on the other (c.f. Astala & al. 2005). The difference between the mathematical literacy of PISA and the kind of mathematics needed for further studies, in which Finnish 9th graders were seen to be hopelessly lacking, was (and still is) widely debated in the press. PISA 2006, with science literacy as the major domain and Finnish students again at the top, finally established the notion of the good fit between

the Finnish curriculum and PISA tasks as a salient factor in explaining Finnish students' success. Besides, it might have been of help that due to the common concern for Finnish students' lacking mathematical and science proficiency, a national programme for boosting up math and science instruction was instigated in the Finnish comprehensive schools in the 1990's (ME 2002).









CONCLUSIONS

The results of PISA are not all there is to education, but the continuous success of Finnish students can be seen to attest to a successful implementation of the objectives of the Finnish comprehensive school reform since the early 1970s.

PISA has induced generalisations of the superiority of the comprehensive school, partially based on the excellent performance of Finnish students. A closer analysis of the PISA data reveal, however, that the conclusion might be premature or unwarranted in that it seems not to take into account all reasons for the success of countries with a comprehensive school or the results of all countries with a comprehensive education for the first nine years. As it is, the conclusion seems to be based mainly on those countries where students still are in comprehensive school at age 15, the time of the implementation of PISA. The effect of comprehensive education can be seen in the small contribution of between-school variation to overall student variation while also the latter tends to be relatively small. But, especially in socially relatively homogeneous countries like Finland, as long as children attend schools following a curriculum geared to teaching the same contents for the whole age cohort, both are to be expected. However, in Finland like in Denmark, Iceland and Norway, the situation will be very different a year later when students move on to the upper secondary level with its general (academic)

and vocational (professional) schools with their own curricula and socially distinctive student bodies.

Besides, the general objective of PISA to measure students' ability and willingness to apply their knowledge and skills in 'real life' like tasks, even if completed in school setting, might specifically favour the comprehensive system whose focus by necessity is on knowledge and skills deemed necessary for the whole age cohort, irrespective of the diverging future plans of the students. There is hardly reason to argue that providing these skills for all would not be a worthy goal for all education systems, and there is every reason for satisfaction in Finland for having succeeded in it so well. But in view of the significance PISA has attained at both the international and national levels of education policy since the release of the first PISA results in 2001, a wider discussion might be warranted regarding the making of (too) far-reaching conclusions for national education policies based on just one type of study, covering only one dimension amongst the multitude of objectives each country has set for their education systems.

The above is not to say that the Finnish comprehensive school or a common school for the whole age cohort would not have been a bold educational decision with v positive outcomes. Even if PISA does not confirm that a comprehensive system will necessarily lead to high overall attainment or low between-student variation in academically more demanding tasks, the results do not show either that a selective parallel system with or without a private sector would do any better in these respects. Instead, the results of PISA seem to confirm that the consequences of the latter may be worse in many respects, especially regarding the knowledge and skills of students from less favourable background. While willingly admitting the need for continuous evaluation and development of the Finnish education system, we are pleased to conclude that current empirical evidence, combined with the moral argument for educational equality still speak strongly for a comprehensive school with high national standards and well-functioning student support.

REFERENCES

- Aho, E., Pitkänen, K. & Sahlberg, P. (2006). **Policy Development and Reform Principles of Basic and Secondary Education in Finland since 1968**. Working Paper Series: Education 2. Washington, DC.: World Bank.
- Astala, K., Kivelä, S.K., Koskela, P., Martio, O. Näätänen, M. & Tarvainen, K. (2005). **The PISA survey tells only a partial truth of Finnish children's mathematical skills**. *Matematiikkalehti SOLMU* [Mathematics Journal SOLMU]. Retrieved at <http://solmu.math.helsinki.fi/2005/erik/PisaEng.html>, August 2008.
- Ingold, T. (1997). **Finland in the New Europe. People, Community and Society**. Newsletter of the Finnish Institute in London, No. 4.
- Hautamäki, J. Harjunen, E. Hautamäki, A., Karjalainen, T., Kupiainen, S., Laaksonen, S., Lavonen, J., Pehkonen, E., Rantanen, P., Scheinin, P. with Halinen, I. and Jakku-Sihvonen, R. (2008) **PISA 06 Finland. Analyses, reflections and explanations**. Ministry of Education publications 2008:44.
- Laukkanen, R. (2008). **Finnish strategy for high-level education for all**. (pp.305-24). In N.C.Soguel & P. Jaccard (Eds.), *Governance and performance of education systems*. Berlin: Springer.
- Lavonen, J. (2008) **PISA 2006 – Science Literacy Assessment**. In Hautamäki & al. (2008) **PISA 06 Finland. Analyses, reflections and explanations**. Ministry of Education publications 2008:44.
- Lie, S., Linnakylä, P. & Roe, A. (Eds.)(2003). **Northern Lights on PISA. Unity and diversity in the Nordic countries in PISA 2000**. Oslo: Department of Teacher Education and School Development.
- Kupiainen, S. & Pehkonen, E. (2008) **PISA 2006 – Mathematical Literacy Assessment**. In Hautamäki & al. **PISA 06 Finland. Analyses, reflections and explanations**. Ministry of Education publications 2008 :44.
- ME (2002). **Finnish knowledge in mathematics and sciences in 2002. Final report of LUMA Program**. Helsinki: Ministry of Education. Available online www.minedu.fi/OPM/Julkaisut/2002/finnish_knowledge_in_mathematics_and_sciences_in_2002_final_rep?lang=fi
- Mejling, J., & Roe, A. (2006). **Northern Lights on PISA 2003 – a reflection from Nordic countries**. Oslo: Nordic Council of Ministers.
- NBE (2004). **Framework Curriculum for the Comprehensive School 2004**. National Board of Education: Helsinki
- OECD (2004). **Learning for Tomorrow's World. First Results from PISA 2003**. (www.oecd.org/dataoecd/1/60/34002216.pdf)

OECD (2006a). **Assessing Scientific, Reading and Mathematical Literacy: A Framework for PISA 2006.** (www.pisa.oecd.org/xxx)

OECD (2006b). **Document: ReleasedPISAItems_Maths.doc**

OECD (2007a) **Assessing Scientific, Reading and Mathematical Literacy. A Framework for PISA 2006.** (www.pisa.oecd.org/document/33/0,3343,en_32252351_32236191_37462369_1_1_1_1,00.html)

OECD (2007b). **PISA 2006 Science Competencies for Tomorrows World. Volume I – Analysis.** (www.pisa.oecd.org/dataoecd/30/17/39703267.pdf)

Simola, H. (2005). **The Finnish miracle of PISA: historical and sociological remarks on teaching and teacher education.** *Comparative Education*, 41, 455-470.

Väljjarvi, J., Kupari, P., Linnakylä, P., Reinikainen, P. & Arffman, I. (2003). **The Finnish success in PISA – and some reasons behind it. PISA 2000.** Jyväskylä: Institute for Educational Research.

Väljjarvi, J., Kupari, P., Linnakylä, P., Reinikainen, P., Sulkunen, S., Törnroos, J. & Arffman, I. (2007). **The Finnish success in PISA – and some reasons behind it 2.** Jyväskylä: Institute for Educational Research.

WRITERS & CONTACTS

Sirkku Kupiainen, Centre for Educational Assessment |
University of Helsinki | sirkku.kupiainen@helsinki.fi

Jarkko Hautamäki, Department of Applied Sciences of Education
& Centre for Educational Assessment | University of Helsinki |
jarkko.hautamaki@helsinki.fi

Tommi Karjalainen, Centre for Educational Assessment |
University of Helsinki | tommi.t.karjalainen@helsinki.fi

MINISTRY OF EDUCATION

Jari Rajanen, Counsellor of Education, PISA Governing Board
P.O. Box 29, FI-00023 Government, Finland



OPETUSMINISTERIÖ

Undervisningsministeriet

MINISTRY OF EDUCATION

Ministère de l'Éducation

Ministry of Education Publications, Finland 2009:46

ISSN:1458-8110 (print) | ISSN: 1797-9501 (PDF)

ISBN: 978-952-485-778-9 (pbk.) | ISBN: 978-952-485-779-6 (PDF)

Distribution and sales

Helsinki University Print Bookstore

PO Box 4 (Vuorikatu 3 A), FI-00014 Helsinki University, Finland

Tel +358 9 7010 2363 or 7010 2366 | Fax +358 9 7010 23744

<http://kirjakauppa.yliopistopaino.fi/> | books@yopaino.helsinki.fi | www.yliopistopaino.helsinki.fi