CHAPTER 2

The Finnish Paradox

Less Is More

If everybody thinks the same way, nobody thinks very much.

—My grandmother's advice to me for succeeding in life

Today Finland is regarded as one of the world's most literate societies. As a nation of modest people, Finland never actually intended to be the best in the world in education. Finns like to compete, but collaboration is a more typical characteristic of this nation. In the early 1990s when Finnish education was known internationally as average, the Finnish minister of education visited her colleague in neighboring Sweden to hear, among other things, that by the end of that decade the Swedish education system would be the best in the world. The Finnish minister replied that the Finns' goal is much more modest than that. "For us," she said, "it's enough to be ahead of Sweden." This episode is an example of the close sibling-like relationships and coexistence between Finland and Sweden. In fact, companionship is more common than rivalry between these neighboring Nordic nations, which share many values and principles in their education systems and societies.

This chapter answers questions such as: Has the Finnish education system always been a top performer? What do we mean by a successful education system? How much does homogeneous society or culture explain Finland's good educational performance? This chapter also describes how Finland has been able to improve participation in education, creating equal educational opportunities for all, and how it has spread good-quality teaching to most schools and classrooms with modest overall cost. Rather than increasing time for teaching and learning, testing students more frequently, and insisting that students work harder on their homework, Finland has done the opposite, as this chapter illustrates. The key lesson from Finland is: There are alternative ways to build good public education systems that differ from those commonly offered in world education policy forums.

FROM PERIPHERY TO LIMELIGHT

In the 1980s the Finnish education system had only a few features that attracted any interest among international educators. Many aspects of education policy were adopted from Finland's wealthier western neighbor, Sweden. In international comparisons, Finnish education was exceptional on only one account: Finnish 10-year-olds were among the best readers in the world (Allerup & Medjing, 2003; Elley, 1992). Other than that, international education indicators left Finland in the shadows of traditional education superpowers such as Sweden, England, the United States, and Germany. What is noteworthy is that Finland has been able to upgrade human capital by transforming its education system from mediocre to one of the best international performers in a relatively short period of time. This success has been achieved through education policies that differ from those found in many other nations. Indeed, some of Finland's educational reform policies appear to be paradoxes because they depart so clearly from global educational reform thinking that often insists upon hard-hand control, more data, tougher accountability, and harder work from all involved in schooling.

When the OECD countries in the mid-1990s first discussed the need to create new metrics and measurements to compare educational performance in the most developed countries, Finnish authorities were concerned about whether this was a good idea. They questioned whether a fair single measure for such a diverse set of countries and economies as the United States, Japan, Italy, and Finland, for example, would be possible in the first place. They were also afraid that this new student assessment program would become an international league table, ranking entire education systems from the best to the worst by using one single criterion. These views were overruled and the inauguration of the Programme for International Student Assessment (PISA) was set for the year 2000. Because the massive amount of data from the 28 countries that were then OECD members and 4 partner countries took some time to process, the first results were scheduled to be released in December 2001.

PISA is a standardized assessment that measures the extent to which students at the end of compulsory education can apply their knowledge to real-life situations and how far they are equipped for full participation in society. OECD describes the essence of PISA (at pisa.oecd.org):

> Since the year 2000, every three years, fifteen-year-old students from randomly selected schools worldwide take tests in the key subjects: reading,

mathematics and science, with a focus on one subject in each year of assessment. The students take a test that lasts 2 hours. The tests are a mixture of open-ended and multiple-choice questions that are organized in groups based on a passage setting out a real-life situation.

More than 70 countries (and cities) have signed up to take part in the test for 2015 that will focus on science. It is important to keep in mind that PISA is a sample-based assessment that uses statistical methodology to analyze collected data to make generalizations. PISA is methodologically similar to other international student assessments, such as TIMSS and PIRLS, but it measures different types of learning, as mentioned above.

Prior to the first cycle of the PISA in 2000, many countries thought that their education systems were world-class and that students in their schools were better learners than those elsewhere. Educational indicators about educational attainment, spending, and college graduation rates, as well as academic competitions such as the International Olympiads in mathematics, physics, and chemistry (and later in subjects such as computer science, biology, and philosophy), had given these nations reason to celebrate the respective performances of their school systems. In academic scholarly competitions, high school–aged students compete to demonstrate advanced-level knowledge in their fields. Naturally, those education systems that have established effective selection systems to identify talents and special abilities early on and then provide gifted students with optimal learning opportunities have succeeded well in these games. Population-rich nations with large numbers of students, such as China, the United States, and the former Soviet Union, have acquired reputations as high-performing education nations on the basis of academic Olympiads. Interestingly, several Central and Eastern European countries—among them Hungary, Romania, and Bulgaria—are ranked high in the overall league tables of these Olympiads. Table 2.1 illustrates the top 12 countries in mathematics Olympiads and the position of Finland and some of its neighbors among them between 1959 and 2013.

Success in these academic Olympiads was often used as a proxy for the quality of national educational systems. Even if Finnish students' performance in mathematics is adjusted for population size, the relative position of Finland has fluctuated between 25th and 35th in the overall global rank list. Until 2001—and in some circles, for quite some time after that—a common conception in Finland was that the level of mathematical and scientific knowledge and skills of Finnish students was internationally modest, at best.

Table 2.1. Finnish Upper-Secondary School Students in Mathematics Olympiads Compared with their Peers in Selected Countries in 1959–2013

	Medals			Number of Participations	Number of Participating Students
	Gold	*Silver*	*Bronze*		
1. *China*	128	27	6	28	164
2. *USA*	100	106	29	39	246
3. *Russia*	84	39	9	22	132
4. *Hungary*	77	149	88	53	354
5. *Soviet Union*	77	67	45	29	204
6. *Romania*	73	124	96	54	362
7. *Korea*	55	60	25	26	156
8. *Bulgaria*	53	99	100	54	366
9. *Vietnam*	49	92	66	37	222
10. *Germany*	49	86	66	36	222
11. *UK*	41	81	117	46	302
12. *Iran*	38	80	32	28	163
34. *Sweden*	5	25	70	46	301
36. *The Netherlands*	4	26	63	43	280
46. *Norway*	2	11	28	30	172
55. *Finland*	1	8	48	40	254
61. *Denmark*	1	5	23	23	132

Source: International Mathematical Olympiad (www.imo-official.org/)

In 2008, OECD launched the Teaching and Learning International Survey (TALIS), which explored various aspects of teaching and learning in 24 participating countries. The second cycle of TALIS was conducted in 2013 in 34 countries. Finland and the United States did not participate in 2008, but both did so in 2013. TALIS asks a representative sample of teachers and school principals in each country about their working conditions and learning environments. According to the OECD (2014b, p. 26), "[TALIS] aims to provide valid, timely and comparable information to help countries review and define policies for developing a high-quality teaching profession." This survey, OECD says, enables teachers and school leaders to provide input into educational policy and

development in key areas. TALIS results are based on opinions, views, and perceptions from teachers and school principals. Data that are collected for these surveys are therefore subjective. They include teachers' and school principals' voices, which sometimes differ from the objectively collected data in research projects. Some findings of TALIS 2013 are discussed in the following chapters.

As Finland attracts global attention due to its high-performing education system, it is worth asking whether there has really been any progress in the performance of its students since the 1970s. If such progress in any terms can be reliably identified, then, consequently, the question becomes: What factors might be behind successful education reform? When education systems are compared internationally, it is important to have a broader perspective than just student achievement. What is significant from this analysis is the steady progress Finland has made during the past 3 decades within four main domains:

1. Increased levels of educational attainment of the adult population
2. Widespread equity in terms of learning outcomes and performance of schools
3. Improved student learning as measured by international student assessments
4. Efficiency in using human and financial resources, almost solely from public sources

Let us next take a look at each of these domains in more detail.

EDUCATIONAL ATTAINMENT

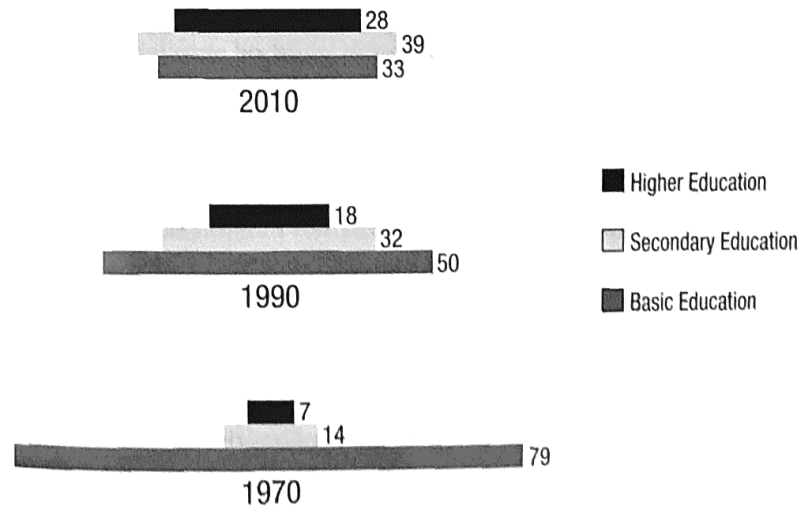
Finland's people remained rather poorly educated until the 1960s. Education was accessible only to those who could afford it and who happened to live close to a grammar school and university. When *peruskoulu* was launched in the early 1970s, for three-quarters of adult Finns, basic school was the only form of education they had completed. Holding an academic degree was rare, as only 7% of Finns held some kind of university degree. Overall progress since 1970 in educational attainment by the Finnish adult population (15 years and older) is shown in Figure 2.1. The current situation is congruent with a typical profile of the educational attainment pyramid in advanced societies, where about

30% of the population has higher educational attainments and about 40% are upper-secondary education degree holders.

Figure 2.1 indicates that there has been steady growth in participation in all levels of education in Finland since 1970. The growth was especially rapid in the upper-secondary sector in the 1980s and, then, within the higher and adult education sectors in the 1990s and up to the present. Policies that have driven Finnish education reform since 1970 have prioritized creating equal opportunities for all children to a good education, improving the quality of teaching and learning, and increasing participation within all educational levels across Finnish society. As a result, each year more than 99% of the age cohort successfully completes compulsory education, about 95% continue their formal education in upper-secondary schools or in the additional 10th grade of *peruskoulu* (3%) immediately after graduation, and 95% of those starting upper-secondary education eventually graduate, which is a license to higher education (Statistics Finland, n.d.a).

According to OECD, two-thirds of the Finnish adult population participated in formal or non-formal adult education programs in 2012, more than in any other country (OECD, 2014a). What is significant about this expansion of participation in education is that it has taken place without shifting the burden of costs to students or to their parents.

Figure 2.1. Level of Educational Attainment Among the Finnish Adult Population Since 1970



Source: Statistics Finland (n.d.a).

According to recent global education indicators, only 2.4% of Finnish expenditure on educational institutions (at all levels of education) comes from private sources, compared with an average of 16.1% of total educational expenditure (OECD, 2014a). For example, in the United States 32.1% and in Canada 23.6% of all funding for educational institutions comes from private sources.

OECD conducted the first cycle of the Programme for the International Assessment of Adult Competences (PIAAC) study in 24 countries, including Finland, in 2012 (OECD, 2013h). The study assessed selected basic skills that adults need in different life situations, including work and everyday living. Reading literacy, numeracy, and practical problem solving in technology-rich environments form the main areas of the PIAAC study. This study provides further information about the quality of educational attainment among adult Finns, and how they are likely to cope with different issues as citizens and in working life.

So, what does PIAAC 2012 tell about adult Finns' knowledge and skills related to everyday life? The average reading literacy skills in Finland are excellent. Only Japan has better overall adult competences. Two out of three adults in Finland are either good or excellent readers. In Canada, just over half and in the United States almost half of adults reach these same levels in reading literacy. The mathematical skills of Finnish adults are at the same high international level; 57% of all adult Finns have either good or excellent skills in numeracy. Again, Japan was the only country that exceeded Finland in numeracy. In both Canada and the United States, adults' everyday mathematics skills fall below the OECD average, with the proportion of good or excellent numeracy skills being 45% and 34%, respectively. In Finland, 41% of adults have good or excellent problem-solving skills in technology-rich contexts. And again, in Canada and the United States, the numbers of adults with good or excellent problem-solving skills are 36% and 31%, respectively. Sweden is the only country that did better than Finland in this aspect of adult competencies. Finland's good performance in PIAAC 2012 was in a large degree thanks to the younger segment of adults between the ages of 20 and 39. Proficiency in basic reading, mathematical, and problem-solving skills is strongly connected to educational background in all countries that participated in this survey, including Finland.

Finland's school life expectancy, which predicts the duration of a citizen's formal education at the age of 5, is one of the highest in the world, at over 20 years in 2013. This is mainly because education is publicly financed and hence available to all. The two types of higher education

institutions offer a place of study for about two-thirds of the age cohort. Because studying in Finnish universities and polytechnics is tuition-fee free, higher education is an equal opportunity for all those who have successfully completed upper-secondary education. The current challenge in Finnish higher education is to encourage students to complete their studies faster than they did before and thereby enter the labor market sooner. The government of Finland is introducing new conditions for financial aid for students that are encouraging students to graduate on time. Total monthly financial aid for higher education students is about 1,000 US dollars, of which 55% is government-guaranteed bank loans and the rest is government grant. A student who graduates on time may deduct annual interest paid for her student loan from her income tax.

EQUITY OF OUTCOMES

People sometimes incorrectly assume that equity in education means all students should be taught the same curriculum, or should achieve the same learning outcomes in school. This was also a common belief in Finland for a long time following the equality-based school reform that was first launched in the early 1970s. Rather, equity in education means that all students must have access to high-quality education, regardless of where they live, who their parents might be, or what school they attend. In this sense, equity ensures that differences in educational outcomes are not the result of differences in wealth, income, power or possessions—in other words, home background.

Equity of education systems is measured in international student assessments by calculating the strength of the relationship between students' achievement in school and various aspects of their home background. OECD uses an index that includes economic, social, and cultural status (ESCS) by calculating a value for equity for each student based on parents' education, occupations, wealth, and some aspects of socioeconomic background. In more equitable education systems, students' learning in school is less dependent on their family background. Countries vary greatly in terms of how much of student achievement is associated with family background, just like they are different with regard to student achievement in reading, mathematics and science in school.

Equality of educational opportunity and equity of outcomes are important features in Nordic welfare states. They mean more than just ensuring that everybody has access to school. In Finland, equity means

having a socially fair and inclusive education system that provides everyone with the opportunity to fulfill their intentions and dreams through education. As a result of the comprehensive school reform of the 1970s, education opportunities for good-quality learning have spread rather evenly across Finland. In the early 1970s, at the start of the implementation of the comprehensive school reform, there was a significant achievement gap among young adults due to very different educational orientations associated with the old parallel system (see Figure 1.1). This knowledge gap strongly corresponded with the socioeconomic divide within Finnish society at the time. Although students' learning outcomes began to even out by the mid-1980s, the streaming of pupils according to ability grouping in mathematics and foreign languages kept the achievement gap relatively wide.

After abolishing streaming in comprehensive school in the mid-1980s and raising learning expectations for all students, the achievement gap between low- and high-achievers began to decrease. This meant that all pupils, regardless of their socioeconomic conditions or interests, studied mathematics and foreign languages in the same non-streamed classes. Earlier, these subjects had three levels of curricula to which pupils were assigned based on their prior academic performance in these subjects and also often on their parents' or peers' influence.

Until the first PISA study in 2000, it was not clear if equality-based education policies and heavy investments in enhancing equity were actually any good for raising the quality of learning outcomes at the system level. Many thought that having equality and equity as the key drivers in national education policy would prevent the system from cultivating individual talent and thereby improving quality. One of the unexpected aspects of the first PISA findings was that most of the education systems with high overall student learning were also the most equitable. Since then PISA has revealed, among other things, that Finland has the smallest performance variations among schools in reading, mathematics, and science scales of all OECD nations (OECD, 2001; 2004; 2007; 2010b; 2013b).

Calculating how much of the total variation in student performance is associated with variation within schools and how much with between-school variation indicates another aspect of equity and equality in education systems. Between-school variation in performance indicates how different schools are statistically in any given country. In the Netherlands, Belgium, and Germany, for example, variation of student learning between schools is larger than within schools, which suggest

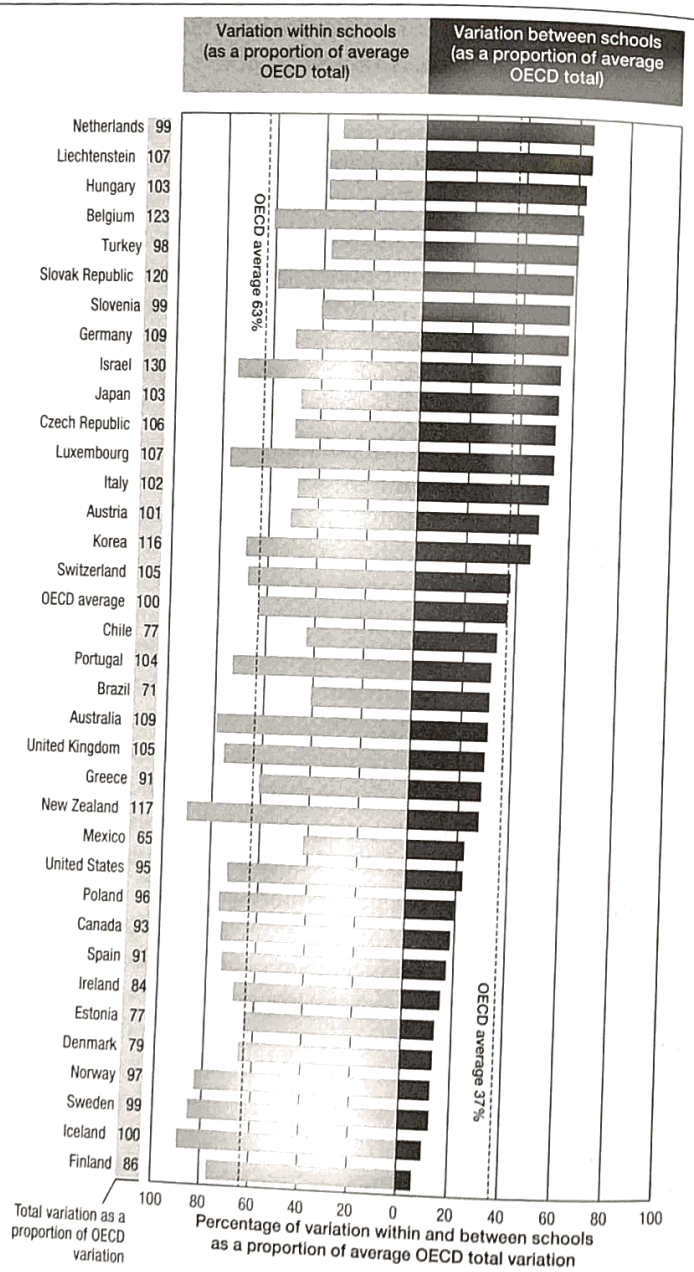
that there is a big gap between schools in terms of their performance overall. Figure 2.2 shows performance variance within and between schools in the OECD countries as assessed by the mathematics scale in 2012 (OECD, 2013b). Across OECD countries, 37% of the overall performance differences are observed between schools and 63% within schools. Total variation of educational performance as a proportion of the OECD variation in Finland is 86%.

According to Figure 2.2, Finland has about 6% between-school variance on the PISA reading scale, whereas the average between-school variances in Canada, the United States, and the United Kingdom are 18%, 23%, and 30%, respectively. Performance variation between different schools in Finland in 2012 was at a level similar to what was shown in the previous PISA cycles. The fact that almost all variation (or inequality) occurs within schools, as shown in Figure 2.2, means that the remaining differences are probably due mainly to variation in students' natural talent. Accordingly, variation between schools mostly relates to social inequality. Because this is a small source of variation in Finland, it indicates that Finnish schools successfully deal with social inequalities. Furthermore, this suggests, as Norton Grubb observed in his review of equity in education in Finland, that Finnish educational reform has succeeded in building an equitable education system in a relatively short time, a main objective of Finland's education reform agenda set in the early 1970s (OECD, 2005; Grubb, 2007). Relatively small between-school variation in performance means that in Finland parents rarely are worried about the quality of their neighborhood school. While choosing a school other than the neighborhood school is an increasing phenomenon in larger urban areas in Finland, parents most often look for an ordinary, safe school for their children.

Strong emphasis on equity in education gives different meaning to *school performance* and how it is measured. Standardized testing has become the most common way to measure school performance in many parts of the world. Test-based accountability relies on data from these tests. Teachers and administrators are held accountable for their students' learning based on these data—but not in Finland. The absence of standardized tests in Finland leaves schools responsible for assessing student achievement themselves. A high-performing school in Finland is one where *all* students perform beyond expectations. In other words, the greater the equity, the better the school is according to the Finnish criterion.

An educational system that is equitable and where students learn well is also able to redress the effects of broader social and economic

Figure 2.2. Variance Within and Between Schools in Student Mathematics Performance on the 2012 PISA Study



Source: OECD (2013b).

inequalities. Since the 1970s, Finnish education policies have fostered high overall levels of student achievement while limiting the influence of student backgrounds on learning outcomes and thereby attaining a high level of equity. Some have wondered why Finns think this is so important. Inequity in educational systems in Finland is seen as particularly problematic because it demonstrates a failure to utilize students' cognitive potential fully. As a small nation, Finland cannot leave any child behind. Evidence also shows that strengthening equity in education can be cost-beneficial. The OECD, after examining the four cycles of PISA data, recently concluded that the highest-performing education systems across OECD nations are those that combine quality with equity (OECD, 2012). Other research (Cunha & Heckman, 2010) demonstrates that investing as early as possible in high-quality education for all students, and directing additional resources toward the most disadvantaged students as early as possible, is a cost-effective strategy that will produce the greatest impact on improving overall academic performance.

How has Finland turned these findings into practices that enhance equity in schools? The universal right that all Finnish children have to high-quality early childhood education is one thing. The other, equally important, is the inclusion of children with special educational needs in mainstream schooling, which is an important guiding principle of Finnish education. All schools must have special education teachers and classroom assistants who can help children with special needs. There are notable differences between how special education is defined and delivered in Finland and in many other countries, including the United States. Most important, special education in Finland is for all students, based on the assumption that at some points of our lives all of us need support and help to move forward.

First, in Finland, special education is defined primarily as addressing difficulties related to learning, such as reading and writing, and learning difficulties in mathematics or foreign languages. In the United States and many other nations, students are identified as possessing special education needs if they meet criteria that often refer to a variety of disabling conditions, such as sensory and speech-language impairments, intellectual disabilities, and behavioral difficulties.

Second, in Finland special education needs are identified and addressed as early as possible; *prevention* is a common strategy within special education. This means that there is a larger number of special education children in Finland compared with the United States or

other nations, especially during the early years of schooling. In Finnish comprehensive schools, corresponding to K–9 education in the United States, almost one-third of all pupils were in part- or full-time special education in 2012.

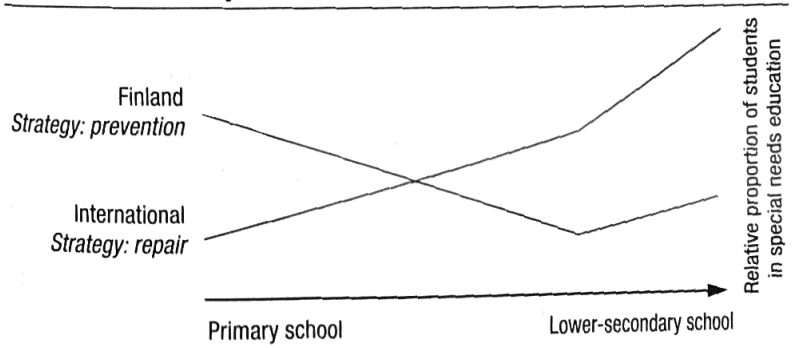
Finally, the new special education system in Finland since 2011 is defined under the title Learning and Schooling Support, and all special education students are increasingly integrated into regular classrooms. There are three categories of support provided to those pupils with special needs: (1) general support, (2) intensified support, and (3) special support. The first includes actions by the regular classroom teacher in terms of differentiation as well as efforts by the school to cope with student diversity. The second category consists of remedial support by the teacher, co-teaching with the special education teacher, and individual or small-group learning with a part-time special education teacher. The third category includes a wide range of special education services, from full-time general education to a placement in a special institution. All students in this category are assigned an Individual Learning Plan that takes into account the characteristics of each learner and thereby personalizes learning to meet each learner's abilities. As a consequence of this renewed special education policy, the number of students in intensified support has increased and in special support decreased. In school year 2013–2014 in *peruskoulu*, 6.5% received intensified support and 7.3% special support. In 2013, about 22% of all students in *peruskoulu* were in part-time general or intensified support. Total percentage of students in special education in Finnish *peruskoulu* in 2013 was 28%, according to Statistics Finland.

Many believe that Finland's special education system is one of those key factors that explain the world-class results in achievement and equity of Finland's school system in recent international studies. My personal experience, based on working with and visiting hundreds of Finnish schools, is that most schools pay very particular attention to those children who need more help to become successful, compared with other students. Many teachers and administrators who have visited Finnish schools think the same way, but they are often stuck in the middle of *excellence versus equity* quandaries due to external demands and regulations in their own countries. Standardized testing that compares individuals to statistical averages, competition that leaves weaker students behind, and merit-based pay for teachers all jeopardize schools' efforts to enhance equity. None of these factors currently exists in the Finnish education system.

At the dawn of *peruskoulu* reform, Finland adopted a strategy of early intervention and prevention to help those individuals with special educational needs of some kind. This means that possible learning and development deficits are diagnosed during early childhood development and care, before children enter school. In the early years of primary school, intensive special support—mostly in reading, writing, and arithmetic—is offered to all children who have major or minor special needs. As a result, the proportion of students in special education in Finland in the early grades of primary school is relatively higher than in most other countries. As Figure 2.3 shows, the number of students who receive special support in school in Finland declines by the end of primary school and then slightly increases as students move to subject-based lower-secondary school. The reason for the increased need for special support in lower-secondary school in Finland is that the unified curriculum sets certain expectations for all students, regardless of their abilities or prior learning. The common strategy internationally is to repair problems in primary and lower-secondary education as they occur rather than try to prevent them from happening (Itkonen & Jahnukainen, 2007). Countries that employ the strategy of repair have an increasing relative number of special-needs students throughout primary and lower-secondary education, as Figure 2.3 shows.

The highly equitable education system in Finland is not a result of educational factors alone. Basic structures of the Finnish welfare state play a crucial role in providing all children and their families with equitable conditions for starting a successful educational path at the age of 7. Extended parental leave, comprehensive and preventive health care for all infants and their mothers, and systematic monitoring of children's

Figure 2.3. Estimated Relative Number of Students in Part-Time or Full-Time Special Education in Finland and Other Countries During Primary and Lower- Secondary Education



physical and mental development are accessible to everybody regardless of life circumstances or wealth. Early childhood education, voluntary free preschool that is attended by some 98% of six-year-olds, comprehensive health services, and preventive measures to identify possible learning and development difficulties before children start schooling are accessible to everyone. Finnish schools also provide each child with a free and healthy lunch every day, regardless of their home socioeconomic situation. Child poverty is at a very low level—about 5% of the child population, compared with over 23% in the United States and 13% in Canada. In order to prevent primary school pupils from being ranked according to their educational performance in schools, grade-based assessments are not normally used during the first 5 years of *peruskoulu*. This has been an important principle in developing elementary education in Finland: Structural elements that cause student failure in schools should be removed. That is why grade retention and overreliance on measured academic performance, which is discussed next, have gradually vanished in Finnish schools.

STUDENT LEARNING

The ultimate criterion of the quality of a national education system is how well students learn what they are expected to learn. International comparisons of education systems put a strong emphasis on scores in standardized achievement tests. Although it is difficult to compare students' learning outcomes today with those in 1980, some evidence of progress in student achievement in Finland can be offered using IEA (International Association for the Evaluation of Educational Achievement) studies, and from research records since the 1970s (Kupari & Välijärvi, 2005; Martin et al., 2000; Robitaille & Garden, 1989). Because it is impossible to conclude whether there has been progress in student learning in general, let us look at some school subjects individually instead.

Mathematics is often used as a proxy for general academic educational performance. The studies available include the Second International Mathematics Study (SIMS) in 1981 (8th grade, 20 nations), Trends in Mathematics and Science Repeat Study (TIMSS) in 1999 and TIMSS 2011 (4th and 8th grades), and five PISA surveys since 2000 (15-year-olds). These are the international student assessment studies in which Finland has participated since 1980. Because the nations participating in each international survey are not the same and the scope

of IEA and OECD surveys are different, the international average as a benchmarking value does not always provide a fully comparable or coherent picture.

Table 2.2 shows Finland's performance in international student assessment studies since the early 1960s when the First International Mathematics Study was launched. These studies normally compare student achievement in reading comprehension, mathematics, and science at three points of education: at the end of elementary school (age 10), in lower-secondary school (age 14), and in upper-secondary school (age 17). Finnish students' performance on the Second International Mathematics Study (published in 1981) was, in all areas of mathematics, at the international average. The national average performance of Finland was clearly behind that of Hungary, the Netherlands and Japan in lower- and upper-secondary education. In 1999, the Third International Mathematics and Science Study ranked Finland 10th in mathematics and 14th in science among 38 participating countries. In TIMSS 2011, Finnish 4th- and 8th-graders were ranked eighth of all participating countries and one of the best education nations outside of East Asia. Since the first cycle of PISA in 2000, Finland has been one of the top-performing nations in mathematics among all OECD member states. Progress has been similar in science since the Second International Science Study in the early 1980s. It is noteworthy that Finnish students have always performed well internationally in reading: Finnish 4th-grade students were the best readers in the Reading Literacy Study in the late 1980s and Finnish 15-year-olds achieved top rankings in all four PISA cycles.

IEA published its 2011 results of 4th- and 8th-grade student achievement in reading (PIRLS) and mathematics and science (TIMSS) in December 2012. Finnish 4th-grade pupils took part in reading literacy tests for the first time since IEA's Reading Literacy Study in 1988. Finland had opted out of TIMSS after a 1999 repeater study because it joined PISA in 2000. In the late 1980s Reading Literacy Study, Finnish 4th-grade pupils were the best readers of all 32 participating countries. TIMSS 1999, which measured mathematics and science, included a representative sample of Finnish 7th-grade students that deviates from normal procedure of IEA, which normally includes a representative sample of 4th- and 8th-grade students. The results of the 1999 TIMSS study showed that among 38 participating countries, Finnish students were doing well above the international average, and among participating OECD countries, Finnish students were close to the OECD average.

Table 2.2. Performance of Finnish Students in International Student Assessment Studies Since the Early 1960s

Study	Population	Countries	Rank of Finland
IEA First International Mathematics Study (FIMS) 1962–1967	13-year-olds and high school completion	12	Average performer
IEA First International Science Study (FISS) 1967–1973	10- and 14-year-olds and high school completion	18	Average performer
IEA Study of Reading Comprehension 1967–1973	10- and 14-year-olds and high school completion	14	Average performer (in one area, third)
IEA Second International Mathematics Study (SIMS) 1977–1981	13-year-olds and high school completion	19 (13-year-olds) 15 (high school)	Average performer
IEA Second International Science Study (SISS) 1980–1987	At primary, middle, and high school completion	23	10-year-olds: high performer; 14-year-olds: average performer
IEA Written Composition Study 1980–1988	At primary, middle, and high school completion	14	Average performer
IEA Reading Literacy Study 1988–1994	9- and 14-year-olds	32	Top performer
IEA Third (later Trends in) International Mathematics and Science Study (TIMSS)	4th and 8th grade	1995: 45 1999: 38 2003: 50 2007: 59 2011: 63	Didn't participate Above average Didn't participate Didn't participate Near the top
IEA Progress in International Reading Literacy Study (PIRLS)	4th grade	2001: 35 2006: 45 2011: 48	Didn't participate Didn't participate Top performer
IEA International Civic and Citizenship Education Study (CIVED and ICCS)	8th grade	1999: 31 2009: 38	Top performer Top performer
OECD Programme for International Student Assessment (PISA)	15-year-olds	2000: 43 2003: 41 2006: 57 2009: 75 2012: 65	Top performer Top performer Top performer Top performer Top in OECD

The release of TIMSS and PIRLS results in 2012 received much less international media attention than when PISA studies were published in 2013.[1] One major difference in these two types of international student assessments is that all 34 OECD member countries take part in PISA, whereas only some of them are included in PIRLS and TIMSS. In 2011, PIRLS covered 48 and TIMSS 63 countries or regions around the world. Overall, Finnish students were close to the top in all PIRLS and TIMSS scales in 2011. Finnish 4th-grade pupils were second in reading and third in science. In mathematics, Finnish 4th- and 8th-grade students were eighth overall. IEA's TIMSS and PISA 2011 studies suggest that Finnish students are close to the world's top performers in all measured school subjects. However, the main concern that these studies also reveal is a low level of motivation and engagement among students in Finnish schools.

What might explain this evident improvement in student achievement in Finnish schools on the international student assessments since the 1980s? There has been some research on this question, but it has produced more speculation and qualitative analysis than reliable answers (Hautamäki et al., 2008; Linnakylä, 2004; Ofsted, 2010; Välijärvi et al., 2007). Three possible explanations appear. First, mathematics teaching is strongly embedded in curriculum design and teacher education in Finnish primary schools. For example, in the University of Helsinki each year about 15% of students in primary school teacher education programs specialize in teaching mathematics. This allows them to teach mathematics in lower-secondary schools as well. As a consequence, most primary schools in Finland have professionals who understand the nature of teaching and learning—as well as assessing—mathematics. Second, both teacher education and mathematics curriculum in Finland have a strong focus on problem solving, thereby linking mathematics to the real world. Mathematics tasks on PISA tests are based on problem solving and using mathematics in new situations rather than showing mastery of curriculum and syllabi. Third, the education of mathematics teachers in Finland is based on subject didactics and close collaboration between the faculty of mathematics and the faculty of education. This guarantees that newly trained teachers with master's degrees have a systemic knowledge and understanding of how mathematics is learned and taught. Both faculties have a shared responsibility for teacher education that reinforces the professional competences of mathematics teachers.

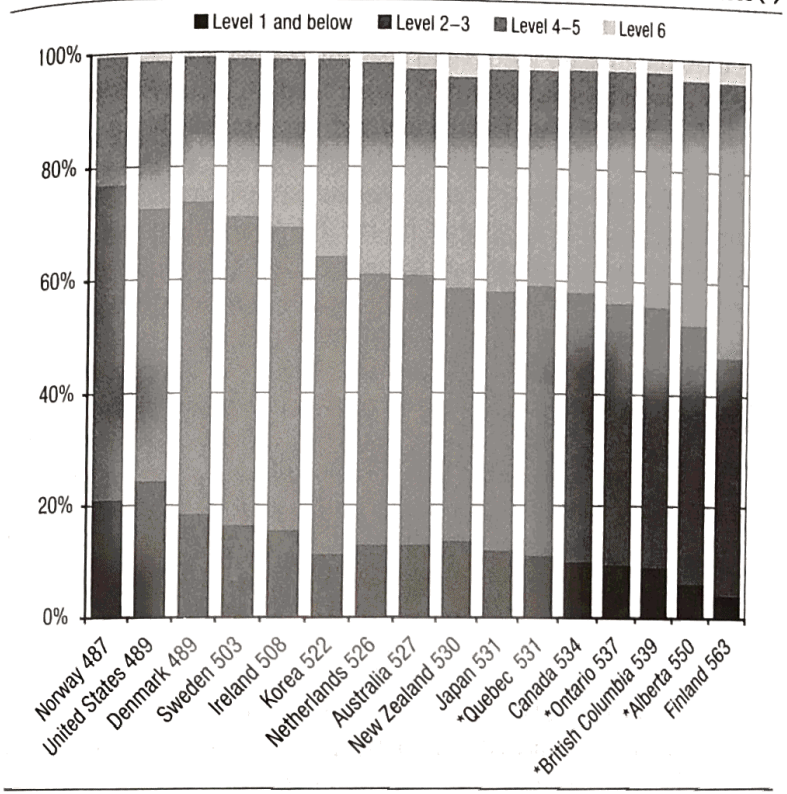
PISA is increasingly being adopted as a global measure to benchmark nations' student achievement at the end of compulsory education. All 34 OECD member nations participate in these triannual assessments of reading, mathematics, and science literacies of 15-year-olds. There is

also an increasing number of countries and jurisdictions (e.g., East Asian cities) taking part in this study. PISA focuses on young people's ability to use their knowledge and skills to meet real-life challenges. PISA uses the concept of literacy to refer to "students' capacity to apply knowledge and skills in key subjects, and to analyse, reason and communicate effectively as they identify, interpret and solve problems in a variety of situations" (OECD, 2013a, p. 24). It is noteworthy that PISA is based on testing a sample of 15-year-old students in each participating country, not all the students. PISA results are therefore an outcome of complicated statistical calculations that are explained in the technical documents available on their website (www.pisa.oecd.org).

Finland was the top overall performer among the OECD countries in 2000 and 2003 PISA studies, and the only one that was able to improve performance. In the 2006 PISA survey, Finland maintained its high performance in all assessed areas of student achievement. In science, the main focus of the PISA 2006 survey, Finnish students outperformed their peers in all 56 countries, some of which are shown in Figure 2.4 (OECD, 2007). In the 2009 PISA study, Finland was again the best-performing OECD country, with high overall educational performance and equitable learning outcomes with relatively low cost. Significant in this national learning profile is a relatively large number of best performers (level 6) and a small proportion of low achievers (level 1 and below). More than half of Finnish students reached level 4 or higher in comparison to the United States, where approximately one quarter of all students was able to do the same. The Canadian provinces Alberta, British Columbia, Ontario, and Quebec also have more than 40% of students showing at least level 4 performance.

The fifth PISA cycle in 2012 confirmed the weak signal that the previous cycle had sent to the Finns: Student achievement in this international ranking had continued to decline. In PISA 2009, reading slid 11 points from the 2006 results, from 547 to 536; math, 7 points, from 548 to 541; and science, 9 points, from 563 to 554. National student assessments and academic research in Finland had showed already, before PISA 2012 became public, that students' knowledge and skills in reading and mathematics were not what they used to be. A study from the University of Helsinki that compared learning outcomes in *peruskoulu* in 2001 and 2012 found a significant drop in 15-year-old students' learning of skills (Hautamäki et al., 2013). PISA 2012 therefore revealed no big surprises in Finland. The score in reading dropped 12 points since the last administration of the exam 3 years earlier, from 536 to 524; in

Figure 2.4. Percentage of Students at Each Proficiency Level on the PISA 2006 Science Scale in Selected OECD Countries and Some Canadian Provinces (*)



Source: OECD, 2007

math, the score dropped 22 points from 541 to 519; and in science, it dropped 9 points, from 554 to 545 (OECD, 2013a).

Many have asked: What has gone wrong in Finland? Why are scores now dropping? Is it because something that was driving improvement earlier has disappeared from Finnish schools? Or is it due to changes in Finnish society or homes? Whatever the reasons behind the changes, Finns must adopt smart responses and avoid hasty, false recoveries; they must analyze past data again; and they must learn more from other countries, both their success stories and their failed reforms.

The unexpected position as a global educational leader and role model may have disturbed Finland's previous commitment to continuous improvement and renewal. Some argue that complacency and a focus on explaining the past to thousands of education tourists have

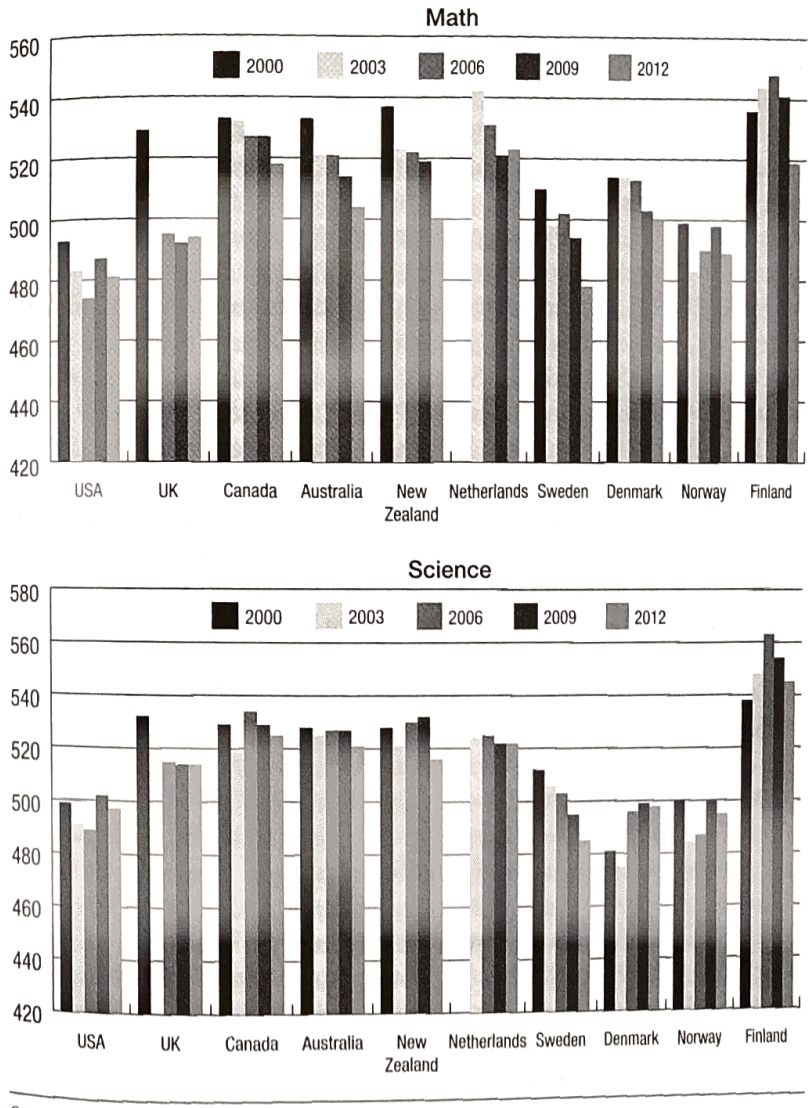
shifted attention away from developing Finland's own school system for the future. Others contend that the high profile of PISA has led other nations to alter their curricula. Such observers point to the usage of PISA questions to shape lessons and coaching students to take PISA-like tests. As a norm-referenced test, PISA is graded on a curve. What other nations have learned from Finland and put into practice has necessarily brought down Finland's own results.

Figure 2.5 shows other divergences in Finnish students' learning performance trends as measured by the PISA mathematics and science scales in comparison with some other OECD countries over time (OECD, 2001, 2004, 2007, 2010b, 2013a). It is noteworthy that student achievement in Finland consistently demonstrated progress until 2006 in all measured subjects, according to the PISA data, which was not the case for many education superpowers. It is important to note that any effects teaching may have had on the results in a given education system primarily reflect the influence of education policies and reforms that were implemented in the 1990s—not the most recent education reforms. The reasons behind Finland's inconvenient downward trend in measured student achievement are further discussed later in this chapter and in Chapter 5.

Another intriguing question emerges from Figure 2.5: What could explain Finnish students' exceptionally good performance in science? The strength of Finland's schools, as far as its success in PISA is concerned, seems to be science education. Some factors suggested by Finnish science educators include the following: First, primary school teacher education has for the past 2 decades focused on redesigning science teaching and learning in schools so that students have opportunities for experiential and hands-on science. At the same time, more and more new primary school teachers have studied science education during their teacher education—more than 10% of graduates of the University of Helsinki have studied some science education in their master's degree programs. These university studies, as part of the normal teacher education program, have focused on building pedagogical content knowledge and an understanding of the scientific process in knowledge creation. Second, the science curriculum has been transformed from traditional academic knowledge-based to one oriented to hands-on experiments and problem solving in the classroom. This change has been followed by massive national professional development support for all primary school science teachers. Third, teacher education in all Finnish universities, including the faculties of science, has been adjusted to the needs of

the new school curriculum. Today, science teacher education is coherent and consistent with the current pedagogical principles of contemporary science teaching and learning that have been inspired by ideas and innovation from the United States and England.

Figure 2.5. Student Achievement in Mathematics and Science on PISA Surveys Between 2000 and 2012 in Selected OECD Countries



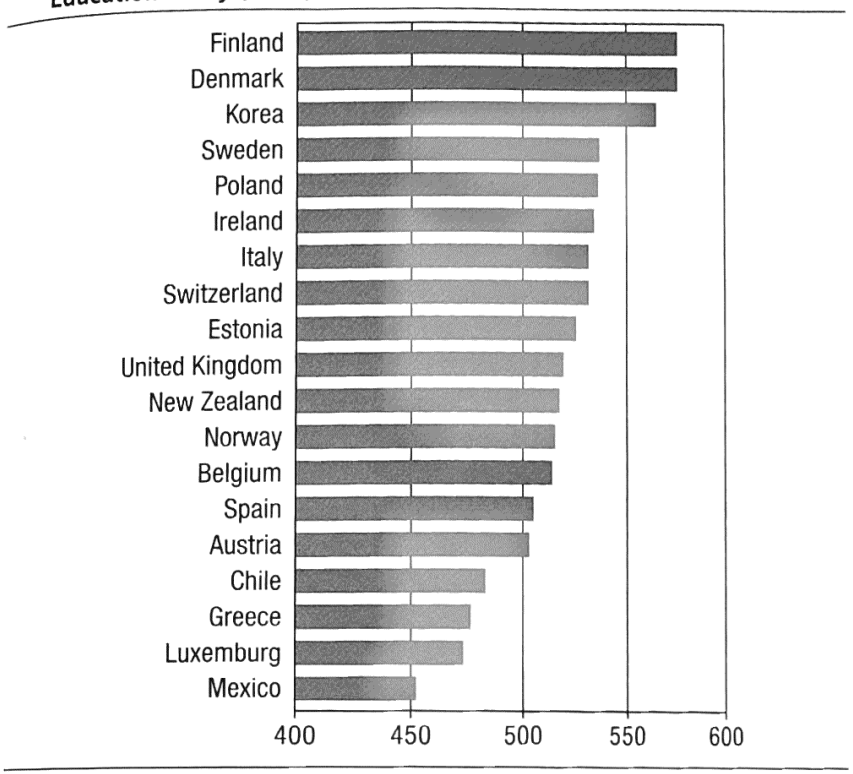
Source: OECD (2001, 2004, 2007, 2010b).

There are few international student assessments that focus on subjects other than reading, mathematics, and science. The IEA International Civic and Citizenship Education Study (ICCS) is one such assessment, and it is the third IEA study designed to measure contexts and outcomes of civic and citizenship education (Schulz, Ainley, Fraillon, Kerr, & Losito, 2010). The ICCS of 2009 that built on IEA's Civic Education Study 1999 studied the ways in which young people in lower-secondary schools (typically grade 8) are prepared to undertake their roles as citizens in 38 countries in Europe, Latin America, and the Asia-Pacific region. A central aspect of the study was the assessment of student knowledge about a wide range of civic- and citizenship-related issues. In this study, *civic knowledge* refers to the application of the civic and citizenship cognitive processes to civic and citizenship content. *Civic knowledge* is a broad term that includes knowing, understanding, and reasoning. It is a key outcome of civic and citizenship education programs and is essential to effective civic participation.

In the 2009 ICCS, Finnish 8th-grade students scored the highest average score in civic knowledge, alongside their Danish peers (see Figure 2.6). As in the PISA and TIMSS results, Finland had the smallest between-school variation in student performance on the ISSC 2009 study. The ICCS 2009 shows a strong relationship between the Human Development Index (HDI) and civic knowledge at the country level. The variation in HDI explains 54% of the between-country variation in civic knowledge. This shows that national averages of civic knowledge are related to factors reflecting the general development and well-being of a country. This finding is similar to those from other international studies of educational outcomes, but it does not necessarily indicate a causal relationship between civic knowledge and the overall development of a nation. Paradoxically, this study also found that Finnish youth feel the least engaged in politics and civic issues in their everyday lives.

All five PISA survey cycles since 2000 indicate that Finnish educational performance is consistent across all assessed educational domains, and that Finnish students on average score high in every survey across all measured subjects (reading, mathematics, and science). The quality of Finnish public education as measured by international student assessment studies has been steadily improving since the early 1970s. PISA 2009 was the second cycle that focused on reading literacy after 2000, and PISA 2012 was the second time mathematics was in focus. These studies therefore provide a unique opportunity to look at the trend in how well students understand and can use what they have learned in

Figure 2.6. Civic Knowledge Scores of 8th-Grade Students in the OECD Countries That Participated in the 2009 International Civic and Citizenship Education Study (ICCS)



Source: Schulz et al. (2010).

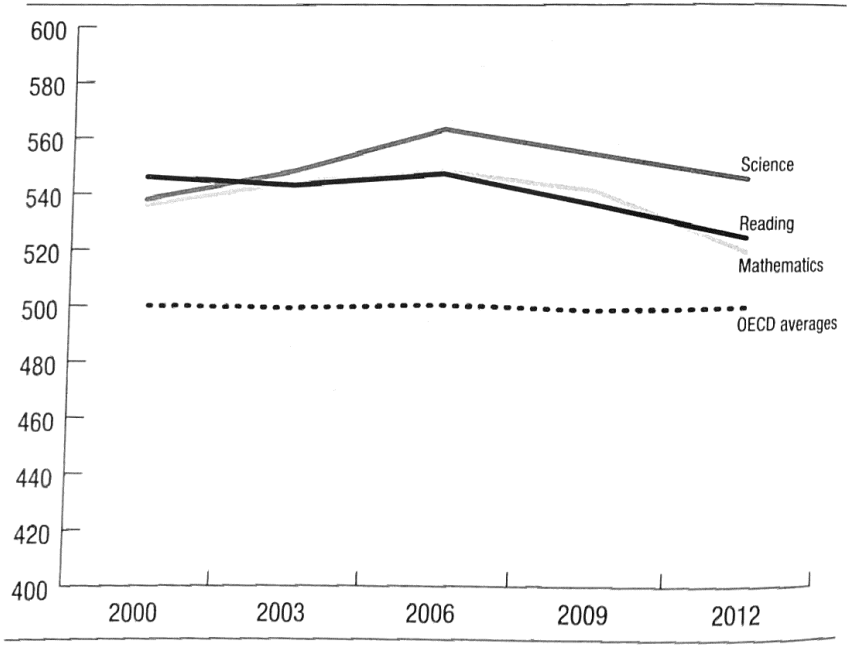
reading and mathematics in school. Although the national average of student performance in 2012 declined from 2000, especially in mathematics, as Figure 2.7 shows, Finnish students' reading and mathematical literacies remain at an internationally high level. What is alarming in the most recent PISA data, however, is related to finding that Finnish young people read less for pleasure today than they did 10 years ago. Half of 15-year-old Finnish boys reported that they don't read for pleasure. This is also clearly visible in national studies of reading comprehension and habits in Finland. It appears that the observed downturn of Finland's educational performance may be associated with boys and their looser grip on school learning.

According to the OECD (2011a, p. 117), "Finland is one of the world's leaders in the academic performance of its secondary school students, a position it has held for the past decade. This top performance is

also remarkably consistent across schools. Finnish schools seem to serve all students well, regardless of family background, socio-economic status or ability." The strength of Finland's educational performance is its consistently high level of student learning, which is equitably distributed across schools throughout the country.

Since its inauguration in 2000, PISA has had a huge impact on global education reforms as well as national education policies in the participating countries. It has become a significant pretext for educational development in Asia, Europe, and North America, and is gaining interest in the rest of the world. Large-scale education reforms have been initiated (in the United States, England, New Zealand, Germany, Korea, Japan, and Poland), new national institutions and agencies have been created, and thousands of delegations have visited well-performing education jurisdictions, including Finland, Alberta, Ontario, Singapore, and Korea, to discover the "secrets" of good education. In most of the more than 70 participating education systems or regions, PISA is a significant source of education policy development.

Figure 2.7. Performance of Finnish Students in Reading, Math, and Science on PISA Surveys, 2000–2012



Source: www.pisa.oecd.org

Perhaps it is surprising that Finnish educators are not as excited by PISA results as many foreigners would expect. Many Finnish teachers and school principals think that PISA measures only a narrow band of the spectrum of school learning. There are also Finns who see that PISA is promoting the transmission of educational policies and practices that are not transferable. This will, they maintain, lead to a simplistic view of educational improvement. Just like in sports, too strong an emphasis on international comparisons (or competitions) may lead to unethical means of temporarily boosting performance just to get a better position in the results tables. A good education system and high educational performance are much more than just measured academic scores. Some teachers in Finland are afraid that the current movement, which judges the quality of education systems by using academic units of measurement only, will eventually lead to narrowing curriculum and the dominance of the measured subjects at the expense of social studies, arts, sports, music, and whole-child development.

There is, indeed, an increasing debate about what these international tests really measure and whether PISA alone can be used to judge the quality of education systems. Earlier critics' and defending proponents' arguments are available in the educational literature (Adams, 2003; Bautier & Rayon, 2007; Bracey, 2005; Dohn, 2007; Goldstein, 2004; Kreiner & Christensen, 2013; Mortimore, 2009; Prais, 2003, 2004; Riley & Torrance, 2003; Schleicher, 2007). More recently, commentators on PISA, most of whom are internationally recognized scholars, have insisted that politicians and the public at large (including media) must understand better what PISA can and cannot do. Among them is David Spieghalter (2013) of the University of Cambridge, who wrote in the *Guardian*, "If PISA measures anything, it is the ability to do PISA tests. Aligning policy along a single performance indicator can be damaging. We need to look at the whole picture." Yong Zhao of the University of Oregon has argued that while the East Asian systems may enjoy being at the top of PISA tests, they are not happy at all with the outcomes of their education. "They have recognized," Zhao writes in his blog post, "the damages of their education for a long time and have taken actions to reform their systems." In his book *Who's Afraid of the Big Bad Dragon* Zhao (2014) offers a comprehensive summary of the most recent critique of PISA and concludes that the core of Chinese education, including Shanghai's high PISA scores, are the three basics: "Chinese families' high expectation, hard work and diligence, and the examination system" (2014, p. 187). Howard Gardner (2010) of Harvard University wrote in his commentary titled

"The Ministers' Misconception" following the 2009 PISA results: "I am constantly surprised at the persistence, in ministerial talk and writing, of allegiance to the 'transmission theory' of education . . . and the notion that the best questions have a single correct answer and a resulting suspicion of multiple plausible answers, productive errors and creative leaps." Finally, Sam Sellar and Bob Lingard (2013) argue that "PISA, and the OECD's education work more broadly, has facilitated new *epistemological* and *infrastructural* modes of global governance for the OECD in education."

These observations are good reminders that PISA is a good servant but a bad master. Even if it may be at the moment the best international assessment for comparing school systems, it nevertheless measures the best of the past. Furthermore, there are many who are afraid that PISA, like many other social indicators, verifies Campbell's Law. Campbell's Law states that "the more any quantitative social indicator is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor" (Campbell, 1976, p. 49). OECD's own analysis shows how PISA has become an increasingly high-stakes social indicator for national policies and their implementation in several countries (Breakspear, 2012). Many Finns—myself included—would like to see lower stakes for these international student assessments among national policymakers and a broader scope of student learning reflected in assessments, including learning-to-learn skills, social competencies, self-awareness, and creativity.

COST OF EDUCATION

Until now we have seen how Finland has transformed its education system by increasing youth and adult participation in all types of education, making a publicly funded education system accessible to a large proportion of its population, and achieving internationally high learning outcomes with very small performance differences between schools across the nation. All of this has been accomplished by financing education, including higher and adult education, almost exclusively from public sources. One more question regarding successful education system remains to be addressed: How much does all this cost Finnish taxpayers?

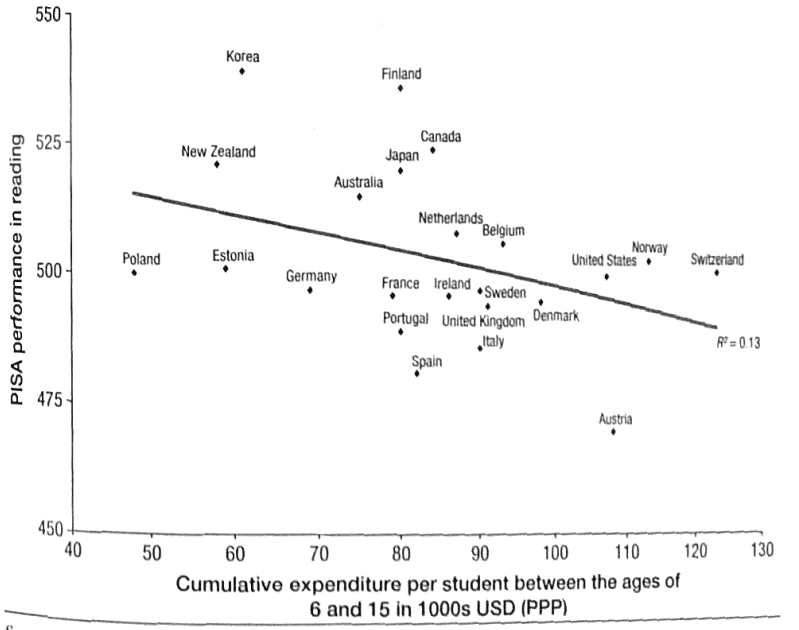
In OECD nations for which data on comparable trends are available for all educational levels combined, public and private investment in Finnish education increased 34% from 1995 to 2004 in real terms, while the OECD average for the same period was 42%. Total public expenditure

on educational institutions as a percentage of GDP in Finland was 6.5% in 2011 (OECD, 2014a). This is close to the OECD average of 6.1% and less than spending in the United States (6.9% of GDP) and Canada (6.8% of GDP). As mentioned earlier, only 2.4% of total Finnish expenditure on education institutions comes from private sources.

The Relationship Between Cost and Student Performance

Figure 2.8 summarizes students' mean performance on the PISA reading scale in relation to cumulative educational spending per student (between 6 and 15 years of age) in 2009 in U.S. dollars and adjusted to purchasing power parities (OECD, 2010, 2013f). These data, first of all, indicate that there seems to be no positive correlation between spending and measured outcomes in education. Second, Finland has accomplished world-class educational performance at a reasonable cost. For example, the United States and Norway have high levels of spending in education but their student outcome results are only moderate. This, of course, does not suggest any causal logic between education expenditures

Figure 2.8. Relationship Between PISA Performance in Reading and Cumulative Expenditure per Student Between Ages 6 and 15 in OECD Countries in 2009



Source: OECD (2010, 2013f).

and learning outcomes, although regression indicates a small negative interdependency (R^2=0.133) between education spending and student achievement. Efficiency is therefore more important to good educational performance than level of expenditure. Money rarely is the solution to the problems in education systems.

The Cost of Grade Repetition

One of the cost factors in education is grade repetition. This means that a student is asked to repeat a grade because he or she failed to successfully master the subject(s) covered the first time. Repetition is a commonly used method of treating individual deficits and problems. Not only is grade repetition an ineffective way to help students who are in need of help, but it is also expensive for education systems. How does Finland cope with this common global phenomenon?

Grade repetition in the old Finnish parallel school system was not rare in elementary schools, and it was an integral educational principle of grammar school. In some cases, a student repeated the 3rd grade of elementary school in order to improve knowledge and skills required in the grammar school admission test at the end of the 4th grade. At the time of the introduction of the new 9-year school, approximately 12% of students in each grammar school grade did not progress from their grade. Grade repetition at that time was not evenly distributed between schools or grades. For example, in general upper-secondary school, one in six students repeated a grade. We have estimated that up to half of those graduating from upper-secondary grammar school repeated one or more grades at some point in their schooling (Välijärvi & Sahlberg, 2008). Furthermore, significant numbers of students dropped out of school before completion—often after not being able to progress from one grade to the next. Inadequate progress in mathematics or Swedish (as a second language) were the most commonly cited reasons for grade repetition, although some students had to repeat a grade because of behavioral or attendance problems.

Peruskoulu was built on the social value of equity and was driven by the idea that all students are able to achieve common academic and social goals through choice-based educational streams in the upper grades of comprehensive school. In the old school system, grade repetition was a method of differentiation for teachers. Problems related to retention were well known at the inception of the new school system in the early 1970s. The impact of being sent back to the same grade with

younger students was often demoralizing and rarely paved the way for the expected academic improvements among students repeating a grade (Brophy, 2006; Jimerson, 2001). After all, repeating an entire grade was an inefficient way to promote learning because it did not focus on those specific parts of the curriculum in which a student needed targeted help. Studying for a second time those subjects that a student had already successfully completed was rarely stimulating for either students or their teachers. Students were sent to the same class without any plan to specify the areas that needed improvement, let alone the methods of achieving most effectively the required levels of knowledge and skills.

In the early days of comprehensive school reform, grade repetition was seen as an inadequate and incorrect strategy for fixing individual learning or social deficiencies. In the elementary school, grade repeaters who had difficulties in one or two subjects were often labeled "failing" students who also had behavioral and personality problems. This educational stigma normally had a dramatic negative impact on students' self-esteem and thereby their motivation and efforts to learn. It also lowered teachers' expectations regarding these students' ability to learn. Grade repetition created a vicious circle that for many young people cast a negative shadow right into adulthood. Educational failure is linked to an individual's role in society and is characterized by unfavorable attitudes toward learning and further education. Leaving this role behind was possible only for young people who had strong identities and high social capital in the form of friends, teachers, and parents. Finnish experience shows that grade repetition, in most cases, led to increased social inequality and did not help students overcome academic and social problems.

Peruskoulu changed grade repetition policies and practices. Although the new system did not completely remove the problem of repeating grades, the number of students who repeated grades in the comprehensive school decreased significantly. Personalized learning and differentiation became basic principles in organizing schooling for students across society. The assumption that all students can achieve common educational goals if learning is organized according to each student's characteristics and needs became another foundation. Retention and ability grouping were clearly against these ideals. Different students have to learn to work and study together in the same class. Diversity in students' personalities, abilities, and orientations has to be taken into account in crafting learning environments and choosing pedagogical methods in schools. This turned out to be one of the most demanding professional

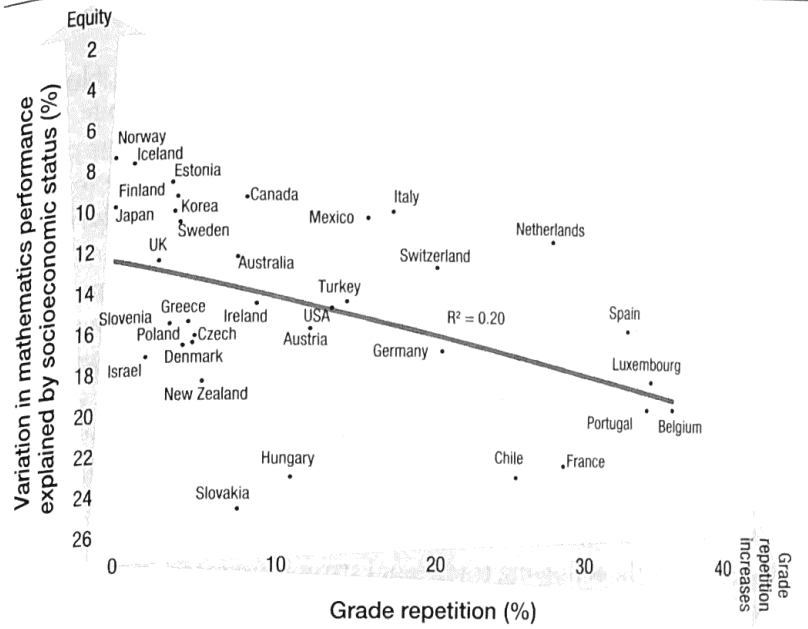
challenges for teachers. Even today, schools are searching for an optimal educational and economic solution to deal with the increasing diversity.

Minimizing grade repetition has been possible primarily because special education has become an inclusive and integral part of every school in Finland. Every child has the right to have personalized support provided early on by trained professionals as a normal part of schooling. This special support is arranged in many different ways today. As described earlier, special education in Finland is increasingly organized within general mainstream schooling. Special education has a key role to play in improving equity and combating educational failure in Finnish schools.

Upper-secondary schools—both general and vocational—operate using modular curriculum units rather than year-based grades. Thus, grade repetition in its conventional form has vanished from Finnish upper-secondary schools. Today, students build their own personalized learning schedules from a menu of courses offered in their school or by other education institutions. Studying in upper-secondary school is therefore flexible, and selected courses can be completed at a different pace depending on students' abilities and life situations. Rather than repeating an entire grade, a student only repeats those courses that were not passed satisfactorily. Most students complete upper-secondary school in the prescribed time of 3 years, although some progress faster while others need more time. This structure that is not tied to yearly classes has also abolished cohorts in which the same group of students moves from one lesson to another and from one grade to the next.

Finland has chosen a policy of automatic promotion combined with the principle of early intervention to help students with special needs. Such attention to dynamic inequalities in all schools, as Norton Grubb points out, is what distinguishes Finland from many other countries (Grubb, 2007). This process requires systematic counseling and career guidance as young people start to think about their educational pathways. Indeed, fewer than 2% of students who leave the compulsory 9-year comprehensive school today at the age of 16 have repeated a grade at some point in their schooling. Grade repetition is at a similar level in other Nordic countries but is much higher elsewhere in Europe: About one-third of students in France, Belgium, the Netherlands, and Spain and one-fifth of students in Germany and Switzerland repeat a grade at least once. Figure 2.9 illustrates negative correlation between grade repetition (percentage of students who have repeated a grade at least once in primary or secondary school) and equity (strength of the relationship between student achievement in school and their family background).

Figure 2.9 Grade Repetition and Equity in Education in OECD Countries in 2012



Source: OECD (2013d).

FINNISH PARADOXES OF EDUCATION

Finland has been a popular destination for many educators and politicians looking for a way to get out of lower-than-expected educational performance and education reform deadlock. Most visitors to Finland discover elegant school buildings filled with calm children and highly educated teachers. They also recognize the large amount of autonomy that schools enjoy: little interference by the central education administration in schools' everyday lives, systematic methods for addressing problems in the lives of students, and targeted professional help for those in need. Much of this may be helpful in benchmarking other countries' practice in relation to a leading education nation such as Finland. However, much of the secret of Finland's educational success remains undiscovered:

- What has the educational change process been like?
- What is the role of other public sector policies in making the education system work so well?
- What role do culture and other invisible factors play?

- How much did Finnish educators take note of global education reform movements in creating their own approaches?

In many ways, Finland is a nation of strange paradoxes. Home of the telecommunication industry and one of the highest mobile phone densities, Finland is also known for its introverted, less talkative people. Finns often prefer isolation to social interaction, but they love to dance the tango. They even select a national tango queen and king during the annual tango festival. Furthermore, with their tough, northern climate, Finns rank among the world's happiest people and live in one of the world's most prosperous nations. Finnish *sisu*, a cultural trademark that refers to strength of will, determination, and purposeful action in the face of adversity, coexists with calmness and tenderness, as Lewis (2005) and Chaker (2011/2014) have noted. Indeed, paradoxes are more helpful than rational logic when it comes to understanding some of the key features of the Finnish people and their education system.

Avoidance of "small talk" is a well-known cultural characteristic of the Finns, as the following traditional story illustrates. Two men met unexpectedly after a long time. Because they had been good friends since boyhood, they decided to go and celebrate their pleasant, unexpected encounter with a drink or two. They soon found a bar, looked for a quiet table, and ordered their first drinks. No words were exchanged and the drinks were soon finished. Their second drinks were ordered and enjoyed, yet there was still no talk. Their third drinks went down in silence, but when the fourth drinks were about to be sipped, one of the men raised his glass for a toast and cheerfully said, "*Kippis*" (which is equivalent to "cheers" in English). The companion gave him a puzzled look and replied, "Did we come here to drink or to talk?"

Minimalism is also favored in other walks of life in Finland. Arts, music, design, and architecture all draw their inspiration from small, clear, and simple ideas. Finnish people think that "small is beautiful." In business, politics, and diplomacy, Finns rely on straight talk and simple procedures. They want to solve problems, not talk about them. Inventions and innovations in Finland are often such that simple ideas make a big difference. It is perhaps not surprising, then, that these same principles and values are embedded in Finnish education. One of Finland's educational values is to put teaching and learning before anything else when education policies and reforms are under consideration. Most of all, Finns don't seem to believe that doing more of the same in education would necessarily make any significant difference for improvement.

Paradox 1: Teach Less, Learn More

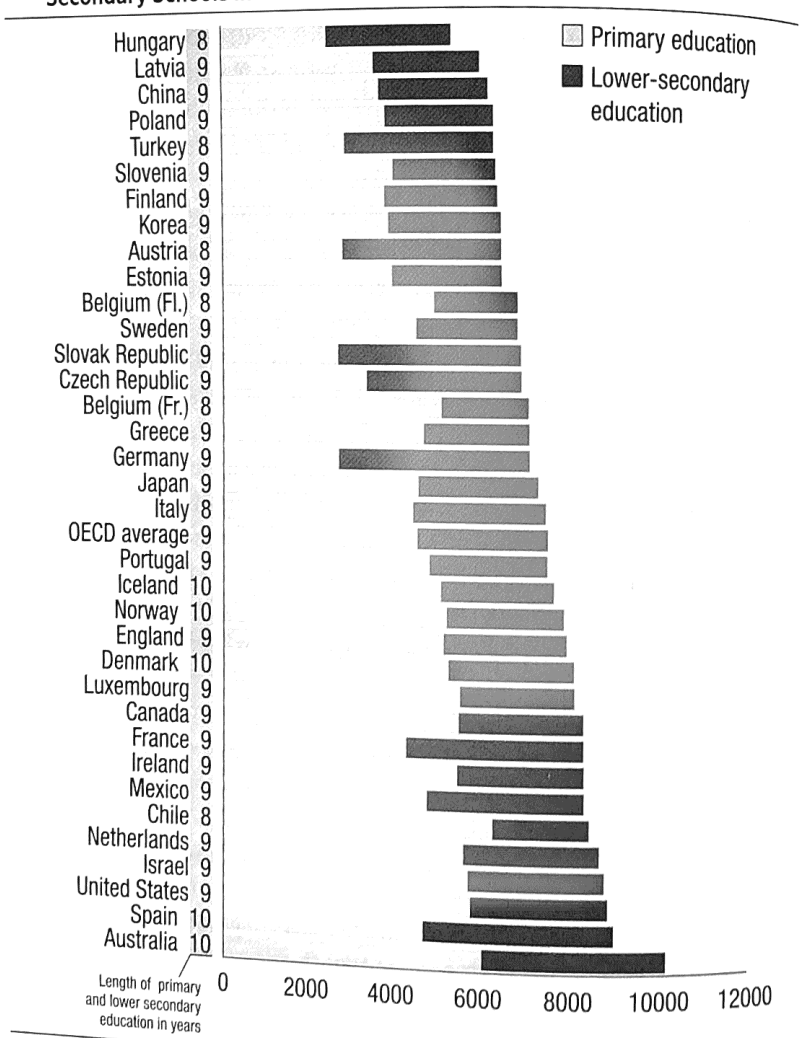
The Finnish experience challenges the typical logic of educational improvement thinking that tries to fix lower-than-expected student performance by increasing the length of education, duration of teaching, and students' homework load. For example, when students are not learning enough mathematics, a common cure is a revised curriculum with more hours of classroom instruction and homework. In most education systems, this also requires more teaching time for teachers. Two international indicators provide a vivid picture of national differences in how much students are exposed to instruction and how much time teachers spend teaching.

First, as Figure 2.10 shows, there are big differences in the total number of intended instruction hours in public institutions between the ages of 7 and 14 in OECD countries. There appears to be very little correlation between intended instruction hours in public education and resulting student performance, as assessed by PISA. Interestingly, high-performing nations in all academic domains included in PISA rely less on formal teaching time as a driver of student learning (Finland, Korea, Estonia), whereas nations with much lower levels of academic achievement (Spain, Israel, and France) require significantly more formal instruction for their students. When these differences are converted into school years, Australian 15-year-olds, for example, have attended at least 2 more years of schooling than their Finnish peers. Moreover, in Finland, children start school at the age of 7, whereas many Australian children start school at the age of 5, which adds even more formal learning time for them (OECD, 2014a). These statistics don't tell anything about how much time students spend in private tutoring or other after-school classes on top of their formal school hours—common practice in all high-performing school systems.

There are no comparable data available regarding compulsory instruction time in the United States in the OECD database. However, estimates from some states of the United States suggest that total instruction time between 6- and 17-year-old students is about 9,500 hours; that is close to what students experience in the Netherlands and Spain, as shown in Figure 2.10. Furthermore, according to the OECD statistics, Finnish 15-year-old students spend less time on homework than

do any of their peers in other nations. This is yet another difference between Finland and many other countries where "minimum homework minutes" and other means have been introduced to make sure that students are kept busy studying after school. Finnish schools seem to follow Sugata Mitra's idea of "minimally invasive education," which proposes that children can learn in unsupervised environments by themselves and by helping one another.

Figure 2.10. Total Number of Intended Instruction Hours in Primary and Lower-Secondary Schools in OECD Countries in 2012



Source: OECD (2014a).

With school days running shorter in Finland than in many other countries, what do children do when their classes are over? In principle, pupils are free to go home in the afternoon unless there is something offered to them in the school. Primary schools are required to arrange after-school activities for the youngest pupils and are encouraged to offer educational or recreational clubs for older ones. Finnish youth and sport associations play an important role in offering youth opportunities to participate in activities that support their overall learning and growth. Two-thirds of 10- to 14-year-olds and more than half of 15- to 19-year-olds belong to at least one youth or sport association. The Third Sector, as the network of these nongovernmental groups is called in Finland, contributes significantly to the social and personal development of young Finns and thereby also to the educational performance of Finnish schools.

Another way to illustrate the *quantity* versus *quality* paradox is to examine how teachers spend their working time across nations. Again, variance among countries is significant, as shown in Figure 2.11. In lower-secondary schools and primary school, on average, Finnish teachers annually teach about 590 hours and 670 hours, respectively (that is, 800 and 900 lessons of 45 minutes each, respectively). This corresponds to about four lessons daily. According to the OECD (2014a), in the United States the average annual total teaching time in primary and lower-secondary schools is 1,131 hours and 1,085 hours, respectively, which equals six or more daily lessons or other forms of instruction of 50 minutes each. Canadian teachers (the numbers vary across the provinces) teach approximately 800 hours in primary schools and 750 hours in lower-secondary schools each year. Lower teaching hours provide teachers with more opportunities to engage in school improvement, curriculum planning, and personal professional development during their working hours.

OECD's TALIS 2013 provides additional information about teachers' working time in Finland and other OECD countries (OECD, 2014b). Lower-secondary teachers' total weekly working time in Finland was 31.6 hours; that is significantly less than in Australia (42.7 hours), the United States (44.8 hours), England (45.9), Singapore (47.6 hours), Alberta (48.2 hours), or in the surveyed 34 countries on average (38.3 hours). On average, about 80% of lower-secondary teachers' working time is spent teaching and learning with students. Finnish teachers reported that they teach on average 20.6 hours a week, whereas their peers in Alberta teach 26.4 hours, in Australia 18.6 hours, in the United States 26.8 hours, and in Singapore 17.1 hours. In the OECD countries, lower-secondary teachers teach an average of 19.3 hours a week.

Figure 2.11. Number of Teaching Hours per Year in Primary, Lower-Secondary and Upper-Secondary Schools in OECD Countries in 2012

Source: OECD (2014a).

How is a typical school day different in Finnish and American upper-secondary schools (or high schools)? First of all, American teachers spend almost twice as long every week teaching or working with students as their Finnish peers. Teaching 6 hours (or four periods) daily is a tough job that leaves many teachers too tired to engage in anything professional when teaching is done. Teachers' work in the United States is therefore primarily defined as teaching in and out of classroom. In a typical Finnish upper-secondary school, on the other hand, teachers teach, on average, 4 hours a day. Despite the fact that teachers are paid by the number of lessons they teach, they also have time every day to plan, learn, and reflect on teaching with other teachers. Teachers in Finnish schools have many other responsibilities besides teaching: They assess their students' achievement and overall progress, prepare and continuously develop their own school curriculum, participate in several school health and well-being initiatives concerning their students, and provide remedial support to those students who may need additional help. Many Finnish schools are, by virtue of a unique definition of teachers' work and by their nature, professional learning communities. Of course, there are exceptions to this general image of teachers' work. Most primary schools, nevertheless, are truly professional learning communities where teaching is a holistic profession that combines work with students in the classroom and collaboration with colleagues in the staff room.

Finnish educators don't believe that more homework necessarily leads to better learning, especially if pupils are working on routine and intellectually unchallenging drills, which is unfortunately what school homework assignments often are. According to some national surveys and international studies, Finnish students in primary and lower-secondary school have the lightest load of homework of all. The *Wall Street Journal* reported that Finnish students rarely get more than half an hour of homework per day (Gameran, 2008). It is true that many primary and lower-secondary school pupils are able to complete most of their homework before they leave school for the day. According to the OECD, Finnish 15-year-old students don't take private tutoring or additional lessons other than what is offered by their school (OECD, 2013b). Seen in this light, the high achievement of Finnish students on international tests is amazing. In Korea, Japan, Singapore, and Shanghai, China—jurisdictions that are on par with or above Finland in reading, mathematics and science—most children spend hours and hours after their regular school days and on weekends and holidays in private classes and test preparation schools.

Interestingly, evidence from the most recent studies indicates that Finnish students experience less anxiety and stress in school than many of their peers in other countries (OECD, 2004, 2007). PISA concludes that only 7% of Finnish students said they feel anxiety when working on mathematics tasks at home, compared with 52% and 53% in Japan and France, respectively (Kupari & Välijärvi, 2005). Similar observations from Finnish classrooms have been reported by scores of journalists around the world. A relaxed culture of learning and a lack of stress and anxiety certainly play a role in the achievement of good overall results in Finnish schools.

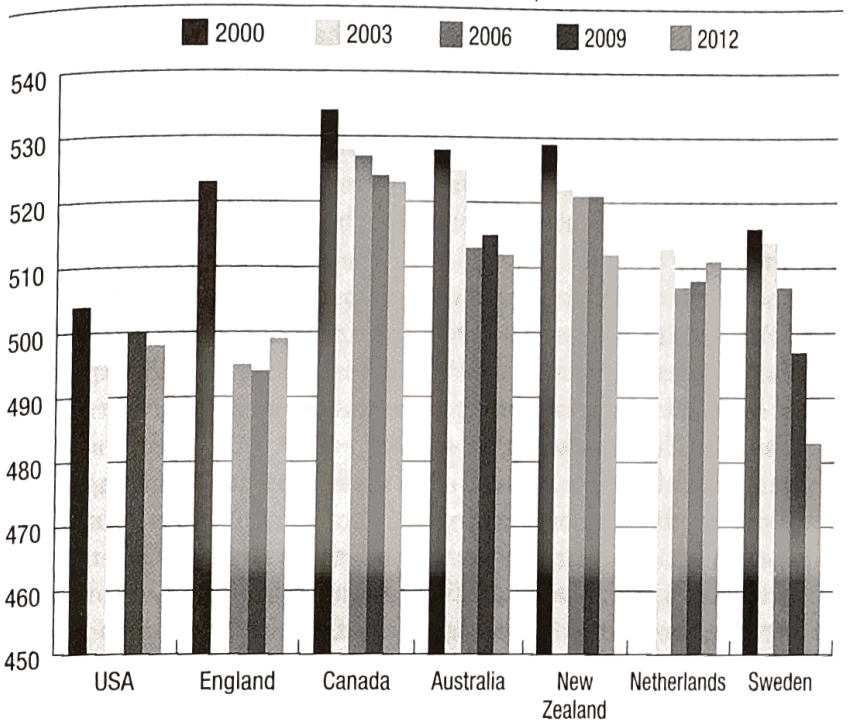
Paradox 2: Test Less, Learn More

The global educational reform thinking includes an assumption that competition, choice, and more frequent external testing are prerequisites for improving the quality of education. Since the Education Reform Act 1988 was passed in England, test-based accountability policies have increased the frequency of standardized testing in many school systems around the world. Judging the annual progress of students' and schools' performance improvements is almost without exception based on these external standardized tests of reading, mathematics, and science achievements. An important question is, *Are those education systems where competition, choice, and accountability based on more frequent use of standardized tests showing progress in international comparisons?*

Using the PISA database to construct such a comparison, a suggestive answer emerges. Most notably, the United States, England, New Zealand, Japan, the Netherlands, and some parts of Canada and Australia can be used as benchmarks. Figure 2.12 demonstrates how 15-year-old students' average performances in reading literacy in five PISA surveys from 2000 to 2012 have changed in these countries (OECD, 2001, 2004, 2007, 2010b, 2013a). Trends in mathematics and science achievement in these same tests are shown in Figure 2.5 earlier in this chapter.

The trend of students' performance in all test-based accountability-policy nations is similar—it has not been improving between 2000 and 2012. Competition between schools over enrollment, increased school choice, and tougher accountability through intensified standardized testing became common policy priorities in these education systems starting in the 1990s. Although this does not constitute evidence that those market-based educational reform policies have failed (remember

Figure 2.12. Average National Reading Literacy PISA Scores in Some OECD Countries Where Competition, Choice, and Standardized Testing Have a Central Place in National Education Policies, 2000-2012



Source: OECD (2001, 2004, 2007, 2010b, 2013a).

my correlation-causation warning), it does suggest that there must be another way to improve the quality and equity of education, as has been demonstrated by more successful education systems recently.

Although students are not tested in Finland as they are in many other countries using frequent standardized tests, this does not mean that there is no assessment of students in Finland or any data about students' learning—quite the opposite. In principle, student assessment in Finland can be divided into three categories. First is classroom assessment by teachers; this includes diagnostic, formative, and summative assessment of students as part of teaching and learning. In all schools, this is solely the responsibility of teachers. All teachers are prepared to design and use various assessment methods in their work. Classroom assessment occupies a significant amount of out-of-classroom working time for teachers.

The second category of student assessment is comprehensive evaluation of students' progress after each semester. Students receive a report

card that indicates their performance in academic and nonacademic subjects as well as in behavior and engagement. Students' report cards are always a collective professional judgment by their teachers. It is up to the school to decide the criteria for this evaluation, based on national student assessment guidelines. This means that report cards issued by different schools are not necessarily fully comparable because they are not based on standardized and objective measures. Many teachers, however, believe that this is less of a problem than having standardized criteria and tests that would impersonalize schools and lead to "teaching to the test."

Third, students' progress in school is also assessed externally in Finland. Regular national assessments are carried out using sample-based methodology that includes about 10% of an age cohort (6th- and 9th-grade students, for example). These assessments measure students' learning in reading, mathematics, science, and other subjects in 3- or 4-year cycles. Subjects are included in these assessments according to the needs or requests of national authorities. Schools that are not included in these samples may purchase one or more of these tests from the National Center for Education Evaluation to benchmark their performance to that of other schools. About one-fifth of all students in the grade cohort take part in this voluntary assessment. As an example, a school of 500 students pays about 5,000 U.S. dollars for each such test, which includes an analysis of results. The annual student assessment in the state budget in Finland is less than 5 million U.S. dollars for the entire school system. In an equal-size state or province in North America—for example, in Massachusetts or Alberta—the student testing budget can be 10 times higher than this.

Testing what students have learned in school is not a bad thing as long as it does not harm teaching and learning. Problems arise when tests become higher in stakes, when they are of poor quality, and when students' test scores are used to judge other things, such as the quality of teachers or schools. There are alarming reports from many parts of the world where high-stakes tests have been employed as part of punitive accountability policies in education (Amrein & Berliner, 2002; Au, 2009; Nichols & Berliner, 2007; Popham, 2007, Ravitch, 2013). Evidence suggests that teachers tend to redesign their teaching according to these tests, give higher priority to those subjects that are tested, and adjust teaching methods to drilling and memorizing information rather than understanding knowledge. It is highly questionable how much educational value such standardized tests, which are high stakes for

teachers and schools (linked to teacher evaluation, promotion, salary, reputation, or accreditation) and no stakes for students, add to student learning and school improvement. Since there are no standardized high-stakes tests in Finland before the Matriculation Examination that students take at the end of their upper-secondary education, teachers can focus on teaching and learning without the disturbance of frequent tests that have to be passed.

Other signs of weakening reliance on competition and testing in education come from recent policy changes in England and Wales, and from the Canadian province of Alberta, where some of the national standardized tests have been banned and replaced by smarter ways of assessing students and schools. Alberta, for instance, had established a system of provincial achievement tests (PATs) that were used to measure pupils' performance in reading, mathematics, and science to inform decisionmakers of overall educational quality in the jurisdiction. Although the province authorities avoided using the testing data to rank schools or point out failing districts, there were some others who did so. Teachers and parents became very frustrated with the situation, in which a lot of good teaching was sacrificed in pursuit of raising test scores. In the spring of 2009, the Albertan Provincial Assembly voted in favor of removing grade 3 tests, and in 2012 the same government decided to redesign the entire provincial assessment system. As a consequence, the Accountability Department in Alberta Education (the Ministry of Education) was dissolved. This was a sign that there must be more intelligent ways to assess students' learning. A neighboring province of Alberta, Saskatchewan, has no external census-based standardized tests at all. In other jurisdictions around the world, however, winds are blowing in the opposite direction.

Paradox 3: Enhanced Equity Through Growing Diversity

The main policy principle of Finland's comprehensive school reform of the 1970s was to provide equal educational opportunities for all, as was described in Chapter 1. This also included the idea that student achievement should be evenly distributed across social groups and geographic regions. It is true that Finland long remained ethnically homogeneous. However, since it joined the European Union in 1995, cultural and ethnic diversification has progressed faster in Finland than in other European Union countries, especially in larger cities' districts and schools, where the proportion of the first- and second-generation immigrant population

accounts for one-quarter of the total population. Table 2.3 shows how the number of foreign-born citizens and residents issued Finnish citizenship has grown in Finland since 1980. In 2013, approximately 5.2% of inhabitants in Finland were foreign-born citizens and thus nonnative-Finnish speakers. The low number of citizenships issued in Finland is mostly due to the requirement that all citizens must be proficient in one of the three domestic languages. All of these—Finnish, Swedish, and Sami—are not spoken anywhere outside of Scandinavia and therefore are rarely spoken by those immigrating to Finland from other places.

Finnish schools have had to adapt to this changing situation within a very short time. As a consequence, some municipalities are introducing limits to the proportion of immigrant students who attend each school to avoid segregation. For example, in the city of Espoo, there are schools with more than 40% immigrant student populations, while some schools have practically no immigrants. In 2013, for example, 4,000 new people moved to live in Espoo. Three-quarters of these new inhabitants were non-Finnish speakers. City authorities believe that a more even distribution of immigrant students in their schools would benefit both students and schools. However, school principals are doubtful about such forceful policies and their impact on communities. The proportion of immigrant children in *peruskoulu* in Helsinki is over 10% and the number of languages spoken in these schools exceeds 40. This trend is evident in all major cities in Finland.

The Finnish education system follows the principle of inclusiveness regarding the treatment of students who have differing characteristics and needs. Students are placed in regular schools unless there is a specific reason to do otherwise. Therefore, in a typical Finnish classroom, one finds teachers teaching students with different abilities, interests, and ethnicities, often with the help of assistant teachers. Cultural heterogeneity in Finnish society would suggest that variance in student learning

Table 2.3. Foreign-Born Citizens and Residents Issued Citizenship in Finland Between 1980 and 2010

Year	Foreign-born citizens	Residents issued citizenship
1980	12,853	621
1990	26,255	899
2000	91,074	2,977
2010	248,135	4,334

Source: Statistics Finland (2011).

among schools may become wider. However, as Figure 2.2 shows, a very high overall student performance in mathematics (and in reading and science) is evenly distributed throughout schools across Finland. In other words, Finland has been able to enhance equity in education while schools and classroom have become more diverse.

The Finnish sociocultural situation, which is experiencing a rapid diversification of schools and communities, offers an interesting case for research. Jarkko Hautamäki has explored the influence of increased immigration on student learning in schools. Two interesting findings emerge. First, based on the PISA data, immigrant students in Finnish schools seem to perform significantly better than immigrant students in many other countries in PISA before 2009 (Hautamäki et al., 2008). Immigrant students in Finland scored on average 50 points higher than their peers in other countries. Second, according to this same study, in the proportion of immigrant students per class there seems to be a threshold after which the learning achievement of all students in that class begins to decline. That proportion of immigrant pupils in Helsinki when notable effects of diversity on student achievement are observable is about 20%.

According to PISA 2012, pupils with immigrant background performed worse in mathematics than before. First-generation immigrant students scored up to one standard deviation lower in mathematics compared with their Finnish-born peers. Helping immigrant students catch up in learning the Finnish language is one of the biggest challenges for larger urban school systems.

Poverty is another factor that affects teaching and learning in schools. Child poverty can be defined as the percentage of children living in homes with an income that is below 50% of the national average. Based on that definition, according to the UNICEF Innocenti Research Centre, 5.4% of children in Finland live in poverty. This is the smallest child poverty rate after Iceland (4.7%). In the United States 23.1%, in Canada 13.3%, in the United Kingdom 12.1%, and in Australia 10.9% of children live in poverty (UNICEF, 2012). The equitable Finnish education system is a result of systematic attention to social justice and early intervention to help those with special needs, as well as the close interplay between education and other sectors—particularly health and social sectors—in Finnish society. It is important to note that the level of student performance has continuously increased and student performance variance has decreased, while Finnish society has become more culturally diverse and socially complex.