EQUITY IN LEARNING?

A COMPARATIVE ANALYSIS
OF THE PISA 2009 RESULTS
IN CENTRAL AND EASTERN EUROPE AND
THE COMMONWEALTH OF INDEPENDENT STATES

Summary brochure
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FOREWORD

As the 2015 target date for achieving the Millennium Development Goals (MDGs) approaches, the numerous debates which are taking place to discuss the post-2015 agenda are increasingly focusing on the issue of the quality of education. With the combined concern of many partners and stakeholders for equity and quality of education, interest has shifted to focus on the results of education processes, in terms of learning outcomes and trends across social groups.

These discussions are particularly relevant for countries of Central and Eastern Europe and the Commonwealth of Independent States (CEE/CIS) which, since the transition, have been facing a crisis in education quality. Education systems in the region are in fact generating growing inequalities in learning outcomes. Countries spending the least on education show the worst results; disparities in learning outcomes are wide and increasingly stratified by socio-economic status and gender. Reforms to improve the quality and relevance of education have been initiated but have not penetrated into the classrooms, especially in poor and rural areas; outdated curricula and teaching methods prepare students for memorisation of facts rather than application of the skills which are critical for performance in knowledge economies.

Despite the efforts of governments to reform their education systems, about half the adolescents in the region leave basic education without mastering core skills in reading and mathematics, and without the competencies necessary in today’s societies. Adolescents from marginalized communities are far more likely to leave school with low levels of learning achievement, less knowledge, and fewer skills and proficiencies than their peers from better-off communities. Inequities in learning and performance eventually lead to dropping out and exclusion from schooling. This can have important consequences for countries, both in terms of economic performance as well as internal stability.

This publication, *Equity in Learning*, offers a foundation for a better understanding of the factors influencing students’ achievement as well as for future reflection and action to improve the outcomes of basic education in the region. It uses sound statistical methods to analyse the most recent data on learning achievement from the OECD’s Programme for International Student Assessment (PISA), from an equity perspective. The study:

1) Presents data on equity gaps in learning outcomes for reading, mathematics and science among 15-year-old students based on the results of PISA 2009.

2) Identifies trends over time and across countries, with particular attention to the link between quality and equity.

3) Proposes policy recommendations that, as evidenced by the data, respond to the challenges in reaching high levels of learning achievement.

Participation in PISA and/or other international assessments demonstrates countries’ strong commitment to monitoring and improving learning outcomes and to being open to understanding their challenges in education quality. The study focuses on the 13 participating countries that had a Programme of Cooperation with UNICEF as of 2009: Albania, Azerbaijan, Bulgaria, Croatia, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Romania, Russian Federation1, Serbia and Turkey. For the purpose of comparison, this report also presents results from eight countries in the region

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1 As of 2013, UNICEF and the Russian Federation no longer have a programme of cooperation. However, in this report, data from the Russian Federation is included because at the time of the data analysis UNICEF and the Russian Federation were cooperating in education.
that became EU member states in 2004 (EU8): Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia.

This research calls on all countries in the region to:

1) Strengthen and refocus policy efforts to improve equity in the quality and relevance of basic education – education systems must improve teacher quality and student engagement in learning.

2) Tackle low student performance with targeted strategies to reduce disparities in learning.

3) Ensure full and equitable implementation of education policies.

We hope that this report will contribute to a better understanding of students’ academic achievement in the CEE/CIS region. We also hope that it will serve as a basis for triggering national dialogue on the importance of monitoring, assessing and analysing learning outcomes and their trends across social groups, and will inspire initiatives to reduce equity gaps in learning.

Marie-Pierre Poirier
Regional Director for CEE/CIS
UNICEF
The region Central and Eastern Europe and the Commonwealth of Independent States is facing a number of major challenges to achieving successful educational outcomes. There is a pressing need to improve access to quality learning for all children, and this has specific implications for education policy throughout the region. Countries need to tackle low student performance and find ways to reduce inequities in learning outcomes – which often revolve around issues such as gender, socio-economic background, rural-urban residence, ability or ethnicity – while more work needs to be done to ensure that education reforms translate into concrete action in schools. It is especially important that CEE/CIS countries create learning environments which move away from teaching practices that focus on the transfer of knowledge from teacher to student and focus instead on the use of innovation, creativity and problem-solving in the classroom.

It is the obstacles countries are facing in their efforts to ensure that all children leave school with the skills needed to participate meaningfully in society that are the subject of this UNICEF brochure. The publication is a synthesis of the major themes that emerged in the UNICEF study of the same title: *Equity in Learning? A Comparative Analysis of the 2009 PISA Results in Central and Eastern Europe and the Commonwealth of Independent States*, which was based on the most recent results of the Programme for International Student Assessment – a large-scale international assessment conducted by the Organisation for Economic Cooperation and Development (OECD).

The PISA results provide an excellent opportunity for analysing not only the quality and relevance of basic education in this region, but also equity issues and trends over time.
The 2009 PISA study involved around 470,000 randomly selected students across the 65 participating countries. School principals answered a questionnaire about their schools, including demographic characteristics and the quality of the learning environment at school.

Box 1 Country groupings (as of 2009)

OECD Countries (34): Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Republic of Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

EU8 Countries (8): Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia.


Study Focus Countries (21) – EU 8 countries and CEE/CIS countries: Albania, Azerbaijan, Bulgaria, Croatia, Czech Republic, Estonia, Georgia (in PISA 2009 Plus), Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova (in PISA 2009 Plus), Montenegro, Poland, Romania, Russian Federation, Serbia, Turkey, Slovakia, Slovenia.

The Programme for International Student Assessment – PISA

PISA was launched by the OECD and is conducted every three years. It measures the performance of 15-year-old students in three main subject areas: reading, mathematics and science. It has so far been conducted four times: in 2000, 2003, 2006 and 2009. In each year there is a special focus on one of the subject areas, which in 2009 was reading.

A total of 65 countries participated in PISA 2009 [and 10 additional participants administered the same tests in 2010 (within the PISA 2009 plus project)]. This study focuses mainly on the 13 participating countries with which UNICEF had a Programme of Cooperation in education as of 2009, referred to in the report as “CEE/CIS countries”: Albania, Azerbaijan, Bulgaria, Croatia, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Romania, Serbia and Turkey; and the Russian Federation**.

For the purpose of comparison, results of the eight European Union countries that became EU member states in 2004 – the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia – are also presented (EU8 countries). Together, the CEE/CIS and EU8 countries are referred to as “study focus countries”. The OECD average is used as a benchmark.

** As of 2013, UNICEF and the Russian Federation no longer have a programme of cooperation. However, in this report, data from the Russian Federation is included because at the time of the data analysis UNICEF and the Russian Federation were cooperating in education.
There are clear differences in average performances in all three subject areas – science, reading and mathematics – between the CEE/CIS countries and EU8 countries that took part in PISA 2009. At the top of the rankings are the EU8 countries, with averages similar to those of OECD member states, while at the bottom are the CEE/CIS countries.

In reading, an average of almost half (48 per cent) of students in the CEE/CIS countries do not reach the basic ‘baseline’ level of achievement, compared with 19 per cent among EU8 and OECD countries (see Figure 2). The baseline level is considered to be the minimum for students to be capable of performing basic tasks that will allow them to participate ‘effectively and productively’ in real-life situations related to each of the three subject areas measured. In mathematics, the figure rises to 53 per cent of students in CEE/CIS countries failing to reach the baseline level, compared with 21 per cent in the EU8, while in science the number of students failing to reach the baseline figure in CEE/CIS countries is 47 per cent, compared with 15 per cent in the EU8.

‘In reading, an average of almost half (48 per cent) of students in the CEE/CIS countries do not reach the basic ‘baseline’ level of achievement.’

2 In the PISA study, each proficiency level identified is defined by benchmark skills and subject areas. Level 2 is identified as the baseline level of proficiency. Those who do not reach this level have not mastered the basic skills tested and may, according to the OECD, also have serious difficulties in benefiting from further educational and learning opportunities throughout life.
### Figure 1: Mean performance in reading, mathematics and science literacy, PISA 2009

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*Countries are ranked in order of average performance on the three subject areas. Values in the last three rows refer to the difference between mean scores of country groupings. Source: OECD 2010, PISA 2009 Results: What Students Know and Can Do – Student Performance in Reading, Mathematics and Science, vol.1 Table I.A; Walker M. (2011), PISA 2009 Plus Results: Performance of 15-year-olds in reading, mathematics and science for 10 additional participants, ACER Press Table B2.1, B3.1, B3.3.*

The best-performing country is Estonia, which performs significantly above the OECD average in all three subject areas. Poland performs above the OECD average in reading and science and at a level with the OECD average in mathematics, while Slovenia is above the OECD average in mathematics and science. Hungary is at a level with the OECD average in all three subject areas, as is the Czech Republic in mathematics and science, and Slovakia in mathematics. All other country averages among the study focus countries are significantly lower than the OECD average.

The best-performing country in CEE/CIS is Croatia, together with the Russian Federation in mathematics and science. Croatia is at a level with EU8 countries Czech Republic, Slovakia and Lithuania in reading, and Slovakia, Lithuania and Latvia in science. At the other extreme, Kyrgyzstan is the lowest-performing country among all 74 PISA countries, as was the case in the previous PISA survey (in 2006).
‘...methods of teaching support the repetition of knowledge but not its application’.

In Kyrgyzstan, more than 80 per cent of students do not reach the baseline level of achievement in the three subject areas, which means that these 15-year-olds may not be capable of the basic tasks that will enable them to participate effectively and productively in life. Other CEE/CIS countries where the majority of students do not reach the baseline level of performance are Albania, Georgia and Kazakhstan (in all three subject areas), Azerbaijan (in reading and science), Moldova (in reading and mathematics) and Montenegro (in mathematics and science).

Looking in more detail at performances in different reading areas, one of the key messages to emerge is that students in CEE/CIS seem to be better at obtaining information and understanding the meaning of a text, rather than at reflecting on the implications of its content. This implies that the methods of teaching support the repetition of knowledge but not its application. The ‘reflect and evaluate’ aspect of the test seems to be most problematic for several of the low performers in the region. It was a similar pattern in PISA 2006, which focused on science, where it emerged that students in the CEE/CIS region were better at explaining phenomena scientifically than at identifying scientific issues or using scientific evidence.

The suggestion that students in CEE/CIS are less able to apply the knowledge they acquire in school seems to be supported by the performances of students in two other international surveys of learning achievement. Students from CEE/CIS tend to do better, relative to OECD countries, in both the ongoing Trends in International Mathematics and Science Study (TIMSS) and the Progress in International Reading Literacy Study (PIRLS). One common explanation for the relative lack of success of students from CEE/CIS in the PISA survey is that it assesses how knowledge is used in real-life situations, while TIMSS and PIRLS focus more on measuring skills through a more academic formal curriculum.

**Figure 2:** Percentage of 15-year-old students scoring below Level 2 in reading, PISA 2009 (Level 1b being the lowest measured score)

Source: OECD 2010 vol.1 Table I.2.1, Walker 2011 Table B2.2.
Figure 3: Percentage of 15-year-old students scoring below Level 2 in mathematics, PISA 2009

Source: OECD 2010 vol.1 Table I.3.1, Walker 2011 Table B3.2.

Figure 4: Percentage of 15-year-old students scoring below Level 2 in science, PISA 2009

Source: OECD 2010 vol.1 Table I.3.4 Walker 2011 Table B3.4.
EQUITY IN LEARNING?
A COMPARATIVE ANALYSIS OF THE PISA 2009 RESULTS IN CENTRAL AND EASTERN EUROPE
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THE PERFORMANCE GAP

Average performance levels provide a useful overview, but they mask significant variations in performance within countries. To give an indication of the extent of this variation, we look at the performance distribution in terms of the size of the gap between the top achievers and the lowest achievers, which is known as the ‘relative disadvantage’.

The lowest-performing students in CEE/CIS are six to nine years of schooling behind their highest-performing peers.

Large disparities in performance exist within all countries participating in PISA. Nevertheless, in some countries the differences are small compared with others. The size of the gap between the top achievers (at the 95th percentile) and the lowest achievers (at the 5th percentile) varies by country but ranges in CEE/CIS countries from a minimum of about the equivalent of six years of schooling in Azerbaijan to nine years in Bulgaria. This means that in Azerbaijan the lowest-performing students are about six years of schooling behind their highest-performing peers, and in Bulgaria the gap increases to nine years behind the top-performing students. Following Azerbaijan, the three countries Estonia, Latvia and Romania also have relatively small within-school differences between high and low performers in reading, mathematics and science.

3 This is measured by the gap between the top achievers, at the 95th percentile, and the lowest achievers, at the 5th percentile.
4 Based on the typical gap in OECD countries between the average reading performance of 15-year-old students in two adjacent grades.
When attention is turned to inequalities in performance among various groups within countries – the ‘sub-national’ populations – it emerges that in terms of gender differences girls have significantly higher average scores in reading than boys in all 74 countries participating in PISA 2009. The average gender gap in reading achievement is larger in the study focus countries (48 points) than it is in the OECD (39 points). The smallest gap in the region is in Azerbaijan and the largest is in Albania.

‘Girls have significantly higher average scores in reading than boys in all 21 study focus countries.’

Gender differences in mathematics and science are much smaller than in reading. Nevertheless, there is a tendency for girls to perform better than boys in science, with girls outperforming boys in 14 of the 21 countries in this study. Indeed, girls outperform boys by an average of 10 points across all 21 countries (while the average difference in the OECD is zero). In mathematics, there is an advantage for boys in seven countries (Azerbaijan, Croatia, Estonia, Hungary, Montenegro, Serbia and Turkey), an advantage for girls in three countries (Albania, Kyrgyzstan and Lithuania), and no significant difference in the remaining 11 countries.

With girls outperforming boys in two of the three subject areas, it could suggest a learning crisis for boys. However, at the same time women are under-represented in workforces across the region, which suggests deep-rooted inequities in the benefits of education and inefficiencies in the school-to-work transition.
The home background of students has a strong influence on educational performance. Students from more privileged home settings are often better prepared when entering school, and have access to resources (for example, linguistic, economic and social) that contribute to their success while in school. In addition, students from more privileged families often attend higher-quality schools in which they are more likely to encounter teachers who create stimulating learning environments. Students from socio-economically disadvantaged backgrounds on average are more likely to perform more poorly than their wealthier peers. Indeed, a student from a more advantaged background (i.e. the top one-seventh) scores on average in the study focus countries 36 points more than a student from even an average background. This means that advantaged students are almost one full year of schooling ahead of students from average backgrounds.

‘...advantaged students are almost one full year of schooling ahead of students from average backgrounds’.
Figure 6: Performance difference between girls and boys, PISA 2009

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Countries are ranked by the sum of differences between boys and girls on the three scales. (Typically differences up to ±5 are not significant).

Furthermore, when children with advantaged backgrounds attend schools with high proportions of students with similar advantaged backgrounds the positive effects on educational performance sum up. Indeed, PISA evidence indicates that in most countries a school’s average economic, social and cultural status appears to have a much greater effect on students’ performance than the individual student’s background.

Nevertheless, there are always some ‘resilient’ students who despite their disadvantaged backgrounds manage to achieve high levels of performance. Among CEE/CIS countries, the largest percentage of resilient students is found in Turkey, where 42 per cent of all disadvantaged students (those from the bottom 25 per cent in terms of socio-economic background in their own country) score in the top 25 per cent in reading among students with similar socio-economic backgrounds from all countries.
‘...a school’s average economic, social and cultural status appears to have a much greater effect on students’ performance than the individual student’s background’.

The OECD\(^5\), in a report based on the results of the PISA 2006 survey – which focused on science – suggests that such resilient students are more motivated to learn and have greater self-confidence in their abilities than their disadvantaged low-achieving peers (although in part it might be that they are more self-confident because they perform well). Consequently, the report suggests that policies aimed at promoting positive approaches to learning among disadvantaged students (who generally have lower levels of motivation) could help encourage resilience.

‘In general, students in urban schools perform better than those in rural schools.’

In many countries, socio-economically disadvantaged students also have the added disadvantage of attending schools with lower-quality ‘resources’ (in other words, they attend schools with a lower proportion of full-time teachers with advanced university degrees). However, although the quality of resources tends to be lower the quantity of those resources tends to be more favourable (in other words, there are fewer students per teacher) in schools with a larger proportion of disadvantaged students.

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In general, students in urban schools perform better than those in rural schools, and students in larger towns perform better than those in smaller towns. Taking into account socio-economic background, there is still a more than 80-points difference in reading performance (equivalent to about two years of schooling) between students in city schools and rural schools in Bulgaria, Kyrgyzstan and Hungary.

Whatever the reasons, large differences in performance between schools are an indication of inequality in the school system. Such performance differences are highest in Romania, Slovenia, Hungary and Turkey. In these countries, there is a more than 50 per cent difference between the performances of the highest-performing and lowest-performing schools. Typically, in these countries there is less variation in performance between students within individual schools, compared with students in different schools. It is generally those countries in which students are not separated into different schools according to socio-economic background that tend to have smaller differences between schools and high overall performance (such as Estonia and Latvia).

Figure 7: Score point difference in reading associated with one unit increase in the PISA index of economic, social and cultural status and percentage of variance in student reading performance explained by student socio-economic background

Source: OECD 2010 Figure II.1.4, Table II.3.3. Countries to the left of the chart have a more equitable distribution of learning outcomes by socio-economic background than countries to the right of the chart.
By examining changes in average performance levels across all four PISA assessments (2000, 2003, 2006 and 2009), it is clear that some countries have made significant progress from one assessment to the next, and in some cases across the entire decade. These trends highlight an important point: student performance levels are neither inevitable nor fixed.

Some countries have achieved significant progress in learning outcomes over relatively short periods of time. For instance, among the eight countries in this study with data on reading since 2000 there was a marked improvement in Albania, Hungary, Latvia and Poland, while there was a decline in the Czech Republic, and no significant change in Bulgaria, Romania and the Russian Federation. Over shorter time spans, reading levels in Serbia and Turkey noticeably improved (from 2003 to 2009), as did levels in Kyrgyzstan and Montenegro (from 2006 to 2009). Slovenia, on the other hand, showed a significant decline.

There were several positive developments over the decade, with reductions to both the numbers of students performing poorly and the gap between the highest and lowest achievers. The percentage performing below the baseline level was cut significantly in several countries, falling by 14 per cent in Albania, 13 per cent in Latvia, and eight per cent in Poland. Furthermore, because Latvia and Poland raised the performance of their lowest-achieving students while maintaining the performance level among the highest-achieving students, variation in reading performance also fell.

The largest reduction in the difference between lowest-achieving and highest-achieving students was seen in Latvia, with a 39 per cent fall – making it one of the countries with the smallest difference between highest and lowest achievers – followed by Romania (with a 22 per cent fall) and Poland (with a 20 per cent fall). In Romania, there was a fall in the performance of high-achievers, with no change for low-achievers.

‘The performance of Turkey, in particular, stands out with increases in all three subject areas.’
In terms of reading performance, the degree of difference between schools remained fairly similar in most countries except Poland, which had been one of the countries with the largest share of such variation in 2000 (with performance varying by 62 per cent). By 2009, it had the smallest share of all (19 per cent), following a reform under which 15-year-old students are no longer separated into different types of schools.

The relationship between socio-economic background and reading performance fell in the Czech Republic, Albania and Latvia, while it increased in Romania. The link between schools’ socio-economic background and performance at the school level decreased most in Latvia and Poland, and it also fell in the Russian Federation, suggesting that efforts to reduce inequalities there have been at least partly successful.

For countries that did not participate in PISA 2000, reading performance improved in Serbia and Turkey between 2003 and 2009, and in Kyrgyzstan and Montenegro from 2006 to 2009, while in Slovenia there was a significant fall from 2006 to 2009. In mathematics, performance increased in Turkey and fell in the Czech Republic from 2003 to 2009. Of countries that did not take part in the 2003 survey, Kyrgyzstan and Romania increased their mean mathematics performance from 2006 to 2009, while in Lithuania performance fell. In science, the mean performance of both Turkey and Poland increased from 2003 to 2009, while in the Czech Republic, Montenegro and Slovenia it declined.

The performance of Turkey, in particular, stands out with increases in all three subject areas.

**Figure 8:** Observed changes in mean reading performance between 2000 and 2009, and changes adjusted for socio-demographic differences. b) Changes between 2000 and 2009 of percentage of boys and girls below Level 2

Bars and indicators have a lighter shade of colour where changes are not significant. Countries are ranked by observed change.

Source: OECD 2010 vol. V Tables V.2.1 and V.2.7 (a), Tables V.2.5 and V.2.6 (b).
WHAT WORKS? SYSTEM-LEVEL FACTORS AFFECTING LEARNING

The OECD examines the factors associated with performance and equity at both the country level and also within each country at the school level and at the level of the individual student. Generally, a large number of differences in student performance are accounted for by socio-economic factors – if not solely then at least jointly with other factors. But there are still factors related to school characteristics which can be affected by public policy that seem to make a difference, both in terms of absolute levels of performance as well as in disparities across the system.

One EU8 country, Estonia, is included in the small group of eight countries among the PISA 2009 participants considered to have ‘successful’ school systems. It has a performance above the OECD average and a lower-than-average impact of socio-economic background. The common features of such successful countries are described by the OECD as: a high value is placed on education; there are clear and ambitious standards; there are steps to ensure the quality of teachers and principals; and high-quality learning is provided consistently to every student.

The countries that produce the highest level of learning, such as Estonia, Latvia and Poland, are comprehensive, meaning that they keep children together and do not stream. Among the eight school systems with above-average performance and below-average socio-economic inequalities in PISA none have high levels of streaming. Tracking or separating children by ability at an early age leads to inequities between schools and academic exclusion. Also, in countries where more students repeat grades, or where it is more common to transfer weak or disruptive students out of a school, overall results tend to be worse and socio-economic differences in performance wider.

It should be noted that the factors identified do not necessarily cause the level of performance observed. Relationships are often not simple and direct; the performance of a child, for instance, may not only be linked to the present school attended, but also to schools attended previously as well as to learning out of school.
Tracking students does not improve the overall performance of the education system.

Among the study focus countries, GDP per capita is closely associated with student performance, which suggests a strong link between the two. But although all study focus countries have GDP per capita levels well below the OECD mean some perform significantly better in PISA than the OECD mean. It suggests that once there is enough for the basics, the way resources are used may start to count more. This has distinct implications for policy, because it suggests that well designed and implemented social policies, as well as sustained national efforts, can allow lower-income countries to raise literacy and numeracy levels and produce better learning outcomes.

Within countries, schools with a socio-economic advantage tend to have more educational resources and tend to perform better, suggesting the need for a more equitable distribution of resources across schools. However, the OECD points out that it is the quality, rather than quantity, of resources and the way they are used which matter most for student achievement. As is the case with GDP per capita, the availability of adequate resources such as up-to-date textbooks does not guarantee good outcomes. It is rather that the absence of such resources is likely to have an adverse effect on learning.

The one resource that PISA shows is linked with student performance is the level of teachers’ salaries relative to national income. Although there is no direct measure of teacher quality, it may be that raising salaries attracts higher-quality, more able candidates. The OECD observes that systems prioritising teachers’ pay over smaller classes tend to achieve higher levels of performance.
An important feature of school organisation is the degree of autonomy that schools have in taking decisions on various matters, with schools having more autonomy generally performing better in PISA 2009. The better-performing countries in reading, for instance, are those that grant greater autonomy to schools to allocate resources in such tasks as designing curricula, deciding courses, establishing student assessment policies, and determining textbooks used. Considering all such tasks, principals in the EU8 countries tend to report more autonomy, while the least autonomy is found in the CEE/CIS countries.

‘…systems prioritising teachers’ pay over smaller classes tend to achieve higher levels of performance’.

Schools with better disciplinary ‘climates’, more positive behaviour among teachers and better teacher-student relations tend to achieve higher scores in reading. Most of this effect is connected to socio-economic background, since more disciplined classes are generally attended by students with advantaged backgrounds. But even after taking socio-economic background into account, part of the performance advantage remains. The challenge is to weaken this link between background and climate, in part by changing the social mix of students in some schools.

‘…in all CEE/CIS countries except Croatia students who have attended pre-primary education for more than one year tend to demonstrate higher performance in reading than those who have not’. 
If disadvantage is established early in a child’s life then efforts to mitigate the effects of such disadvantage need to start early. In this regard, access to pre-primary education is very important – especially for those children living in poor households or in vulnerable or marginalized conditions. Even keeping socio-economic background constant, in all CEE/CIS countries except Croatia students who have attended pre-primary education for more than one year tend to demonstrate higher performance in reading than those who have not. In the country with the largest difference, Kyrgyzstan, this difference corresponds to more than one year of schooling.

**Figure 10:** Performance difference in reading between students who report having attended pre-primary school for more than one year and those without pre-primary school attendance, before and after accounting for the socio-economic background of students

Countries are ranked by performance difference after accounting for socio-economic background. Source: OECD 2010, vol.II Figure II.5.9, Table II.5.5. Lighter-shaded bars indicate that differences are not significant.
CONCLUSIONS AND RECOMMENDATIONS

Most CEE/CIS countries have made great strides in increasing enrolment and attendance rates in basic education. However, these achievements mask deep-rooted inequalities in the quality of education provided and the benefits – for personal development, work opportunities and lifelong learning – to young people who have completed their formal schooling.

The latest round of PISA confirms that CEE/CIS countries are continuing to face a number of serious policy challenges in education. Some challenges, such as the disadvantages faced by students from lower socio-economic backgrounds, are universal. Others, such as issues involving the lack of autonomy of schools, have a more serious impact on particular countries, especially those with which UNICEF has a Programme of Cooperation in education. In order to effectively address these challenges it is important that policy stakeholders consider the following key messages that emerge from this report:

MORE ATTENTION NEEDED ON EDUCATION QUALITY AND EQUITY IN LEARNING. In all countries of the region there is an acute need to improve the provision of quality education for all students. It is vital that countries strengthen and refocus their policy efforts to improve the quality, equity and relevance of basic education. Access to quality basic education is a right that each and every child in CEE/CIS deserves. Among other things, this means establishing school systems that improve teacher quality and effectiveness and enhance student learning experiences and outcomes.
SHIFT NEEDED ON HOW QUALITY EDUCATION IS CONCEIVED, MEASURED AND MONITORED. Quality education is not simply a matter of securing adequate educational resources, such as sufficient schools, textbooks, computers and trained teachers. Quality education is also a matter, and increasingly so in the light of globalization, of the quality of knowledge, abilities, skills and attitudes that children take away from their school experiences. Thus, there is a well-defined need for a shift in how quality education is conceived, measured and monitored in the CEE/CIS region. All policy stakeholders should be involved in supporting student learning and monitoring learning outcomes. Especially useful in this regard are current international assessments such as PISA, PIRLS and TIMMS. Other assessments which are appropriate, relevant, transparent and rigorous would also be useful.

MORE NATIONAL AND INTERNATIONAL ASSESSMENTS OF LEARNING NEEDED. The PISA programme, which systematically explores relationships in student performance in reading, mathematics and science, provides a strong platform to examine and debate the worth of different policy options in education. For many countries in the CEE/CIS region, well-designed, methodologically rigorous and transparent studies of student achievement and learning deficits, such as PISA, have been far too rare in the past. The monitoring of such learning deficits and disparities through international assessments is a powerful tool for addressing equity challenges in education and society, especially in the CEE/CIS region where such inequalities are rampant.

COUNTRIES NEED TO TACKLE LOW STUDENT PERFORMANCE. Ways must be found to reduce disparities in access to quality education so that all students emerge from school equipped with the knowledge, skills and proficiencies they need to succeed in life.

EDUCATIONAL REFORMS SHOULD BE EFFECTIVELY AND EVENLY IMPLEMENTED AT ALL SCHOOLS. More work is needed to ensure that education reforms translate into concrete action in schools. It is important that policies are adopted that improve the performance of low-achieving students and schools; expand access to pre-primary education, especially for disadvantaged and minority children; help students learn to read; and focus on ways to improve teacher quality and effectiveness.

CEE/CIS COUNTRIES NEED TO CREATE LEARNING ENVIRONMENTS THAT FIT THE REQUIREMENTS OF A MODERN ECONOMY. This means moving away from traditional practices such as the focus on the transfer of knowledge from teacher to student and instead adopting new methods that emphasize innovation, creativity and problem-solving in the classroom. The focus needs to shift towards the application of knowledge and skills to new situations and away from teacher-dominated classrooms. This policy challenge is widespread throughout the region, and is especially pronounced in the school systems serving poor and rural communities.

MEASURES MUST BE TAKEN TO LESSEN THE EFFECTS OF SOCIO-ECONOMIC DISADVANTAGE. PISA evidence indicates that not only do more advantaged students tend to perform better in schools but they also tend to be found in schools with better-quality resources, such as a higher share of full-time teachers with advanced university degrees. But PISA evidence also shows that the average socio-economic make-up of a school can influence student performance above and beyond the impact of an individual’s personal family background. This means that, in addition to addressing the needs of particular groups of marginalized students, there is a need to consider school-oriented policies.

POOR COUNTRIES CAN HAVE GOOD QUALITY EDUCATION. PISA evidence further shows that although there is a link between GDP per capita and average student performance the link is not straightforward. Indeed, countries with similar levels of prosperity often have rather different levels
of student performance. It seems that above a certain level, the relationship between country wealth and performance does not hold. Such cross-country comparisons underscore a key policy message: well designed and implemented social policies as well as sustained national efforts can allow lower income countries to raise literacy and numeracy levels and produce better learning outcomes.

IMPROVING LEARNING IN CEE/CIS IS POSSIBLE. A similar message emerges when average performance levels are examined across the various PISA assessments (2000, 2003, 2006 and 2009). It is clear that significant progress has been achieved in some countries from one assessment to the next, and in some cases across the entire decade. These trends underscore the important point that student performance levels are neither inevitable nor fixed. They also highlight the significant progress in learning outcomes countries have achieved over relatively short periods of time.

PUBLIC POLICIES ON EDUCATION MATTER. Public policies have made, and will continue to make, a real difference to the lives of children and youth, and to the prosperity and social cohesion of countries in the CEE/CIS region. For public policies to advance quality and equity in education, and to provide effective learning environments in schools, they must be based on the collection and thorough examination of evidence from different sources.

There are a number of factors associated with successful education systems that emerge from the study. It is clear that such systems develop when there are clear and ambitious standards, when a high value is placed on education, when there are steps to ensure the high quality of teachers, and when high-quality education is provided to every student.

PISA shows that the countries which produce the highest level of learning are comprehensive. They do not stream. Tracking or separating children by ability at an early age leads to inequities between schools and academic exclusion. The study also shows that there is a need for a more equitable distribution of resources across schools, with an emphasis on the provision of quality resources efficiently used. It shows that access to pre-primary education is very important, especially for those children living in poor households or in vulnerable or marginalized groups. Finally, it shows that giving schools more autonomy is one way to boost student performance.

It is clear from the analysis of the PISA results that public policy can make a difference in learning outcomes. Because the overall goal of education systems is to ensure that children learn, learning outcomes should be seen as the end result of the education system and measured as such. Policymakers must look at learning outcomes when designing new reforms.