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Technical note prepared for the
Education for All Global Monitoring Report 2012

Youth and skills: Putting education to work

At least 250 million children of primary school-age are failing to learn the basics

Education for All Global Monitoring Report (UNESCO)

2012

At least 250 million children of primary school-age are failing to learn the basics

The 2012 GMR (pp. 124-126) argues that "*around 250 million children either fail to make it to grade 4 or do not reach the minimum level of learning*". One of the central messages made in the Report in developing this estimate is the need to focus more attention on improving data in order to get a better understanding of learning deficits worldwide.

This note explains the three steps taken to reach this estimate:

- the estimate of the number of children who drop out by grade 4 (based on the expected cohort completion rate methodology originally developed by the GMR);
- the estimate of the number of children who make it to grade 4 but do not reach a common minimum level of learning achievement (based on a commissioned paper by Nadir Altinok for the GMR); and
- the projection of the evidence (from 50 countries for which data on both progression and learning is available) to a global estimate (based on assumptions by the GMR team).

Step 1: expected survival to grade 4

The estimate is based on an indicator developed in the 2010 EFA Global Monitoring Report, the 'expected cohort completion rate'. The indicator tracks a cohort of 100 children from the time when they should start school through to completion – and identifies how many reach each grade. For the purpose of this analysis, the number of children expected to reach grade 4 is used. This is the product of two indicators:

- the probability that a child who belongs to a specific cohort (e.g. born in year x) will ever enter school; and
- the survival rate of children who enter school to grade 4.

The data was provided by the UNESCO Institute of Statistics and is available for 122 countries.

Step 2: learning achievement for those who made it at least to grade 4

The estimate is based on a commissioned paper by Nadir Altinok '*A new international database on the distribution of student achievement*' which is available on the GMR website. The objective of the paper is to anchor the results of different learning achievement surveys on to each other to place them on a single scale. The result of this anchoring process (which is based on countries which have taken part on both PIRLS/TIMSS and one of the regional surveys: PASEC, SACMEQ and SERCE) is shown in Figure 1.47 of the 2012 GMR.

For countries that took part simultaneously in two assessments, it is supposed that any score differences between assessments are exogenous to the actual level of country performance. For instance, if the mean mathematics score for Colombia was 400 points in SERCE but 321 points in TIMSS, it is assumed that the SERCE study overestimates the performance of participating countries by about 24%. In order to adjust the SERCE assessment to the TIMSS, the scores need to be adjusted accordingly.

As a result of the anchoring process, more children appear not to have learned the basics in SERCE and PASEC (according to the adjusted 'common' standard) than what the surveys claim (according to the survey's own standard). In other words, it is implied that the level of SERCE and PASEC is easier than the level of PIRLS/TIMSS.

The approach used is similar to that used in the OECD-sponsored 2010 report 'The high cost of low educational performance' by Hanushek and Woessmann http://www.oecd.org/pisa/pisaproducts/pisa2006/44417824.pdf, as outlined in its Annex A. Altinok's background paper for the GMR explains the differences, which include (i) the use of regional assessments (PASEC, SERCE, and SACMEQ) that increases the number of countries covered and (ii) breaking with the need to anchor all surveys to a US standard.

The GMR analysis uses survival to grade 4 although the four assessments are made at grades 4, 5 and 6. This is a simplification, which assumes that there is no major dropout beyond grade 4 for those countries whose pupils are assessed in grades 5 and 6.

The data for both the expected survival to grade 4 and learning achievement was available for 50 countries.

Step 3: projection to a global estimate

In order to make an estimate on the global population of the current cohort of primary school age children who make it to grade 4 and learn the basics, the following assumptions were made. First, the average percentage of children who survived to Grade 4 and learned the basics in each of the four surveys was calculated (this is column (5) in Table 1). Second, countries for which data was not available were grouped according to the learning achievement survey in which they would have most likely taken part (based on their geographic and related characteristics) as follows:

- TIMSS = all countries from the regions of North America and Western Europe, Arab States, Central and Eastern Europe, Central Asia, East Asia and the Pacific except: China, Mauritania, former Sudan
- PASEC = all PASEC countries (including Mauritania and Mauritius) plus: Angola, Cape Verde, CAR, D.R. Congo, Equatorial Guinea, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Rwanda, Sao Tome and Principe, Sierra Leone and Togo.
- SACMEQ = in addition to the SACMEQ countries also Eritrea, Ethiopia, Somalia, and former Sudan
- SERCE = all countries from Latin America and the Caribbean

Third, it was not possible to associate China or countries from South and West Asia directly to any of these groupings for lack of information. For these countries, it was assumed that the percentage of children who either did not survive to Grade 4 or did not learn the basics was equal to:

- 15% in China, which is only slightly below the average for TIMSS countries; and
- 50% in South and West Asia, which is between the averages for SERCE and PASEC/SACMEQ countries.

Table 1 illustrates the three steps. Step 1 is (survival to Grade 4) captured in columns (1-3). Step 2 (learning) is captured in columns (3-4). The average percentage of column (5) is used for Step 3 (projection) which is captured in columns (6-8). The analysis has been also conducted for reading, where results of PIRLS (instead of TIMSS) are used.

Table 1. Estimating the global number of children who do not learn the basics

	Sample					Global		
	Population	Number of children who did not survive to Grade 4	Percentage of children who did not survive to Grade 4	Number of children who either did not survive to Grade 4 or did not learn the basics in maths	Percentage of children who either did not survive to Grade 4 or did not learn the basics in maths	Population of children of primary school age	Estimated number of children who did not survive to Grade 4	Estimated number of children who either did not survive to Grade 4 or did not learn the basics in maths
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TIMSS	52,662,549	2,553,147	5%	6,489,633	12%	186,971,215	9,064,601	23,040,557
PASEC	16,052,302	6,300,584	39%	10,989,607	68%	74,092,400	29,081,522	50,724,583
SACMEQ	24,132,450	6,951,482	29%	18,148,207	75%	64,187,458	18,489,541	48,270,576
SERCE	31,003,586	2,756,847	9%	13,678,546	44%	58,256,169	5,180,154	25,702,178
China	…	…	…	…	*15%*	90,810,834	4,402,624	13,621,625
S & W Asia	…	…	…	…	*50%*	176,941,811	57,251,819	88,470,906
World	…	…	…	…	*38%*	651,781,041	123,470,262	249,830,426

As the Report notes, it is not possible to get a complete global picture of achievement at primary level, as each learning assessment is designed with different objectives and for different contexts. They measure reading and mathematics in different ways and test students in different grades. A proper comparison would require students from all countries to take the same test in the same grade or at the same age. However, even though they are not strictly comparable, the lack of a full set of rigorously comparable data should not prevent recognition of the full extent of the learning deficit – and the inequalities in learning between countries. The intention is that the analysis provided in the Report will help move a step closer to understanding the global learning deficit, while also advocating that the international community adopts more comprehensive approaches to measure learning outcomes across countries in ways that will put pressure on policymakers to take action.

References

Altinok, Nadir (2012) *A new international database on the distribution of student achievement*, Background paper for the 2012 EFA Global Monitoring Report

OECD (2010) *The high cost of low educational performance: the long run impact of improving PISA outcomes*, Programme for International Student Assessment, Paris: Organisation for Economic Cooperation and Development