GAML Brief 6:
The Anchoring Method for Indicator 4.1.1 Reporting

January 2018

Background

The Sustainable Development Goal for education (SDG 4) aims to ensure that all children are in school and learning by 2030. The concept of a 'minimum proficiency level' is key to this idea: all children, no matter where in the world they live, must have a base of knowledge in reading and mathematics. Indicator 4.1.1 requires measuring and reporting these learning outcomes at three education levels: grade 2/3, the end of primary and the end of lower secondary. In order to do this, there must be a common understanding of the minimum proficiency level (MPL) for these foundational skills that are needed in a modern society.

The UNESCO Institute of Statistics (UIS) has put together a portfolio of linking methodologies to find ways to identify commonalities between existing, but diverse, learning assessments to identify proficiency levels and to establish benchmarks. Anchoring is one such method and is described in the paper, Mind the Gap: Proposal for a Standardised Measure for SDG 4- Education 2030 Agenda. The author, Nadir Altinok, explains how it is possible to recalibrate existing data to find roughly comparable proficiency thresholds across different programmes.

Three other approaches to create a common scale by linking existing data complete the portfolio. They include psychometrically informed recalibration based on common items. Running parallels tests on a representative sample of students so that two assessments (one regional and one international) can be expressed on the same scale is another method. A fourth, non-statistical method is a policy linking approach based on social moderation, in which a range of competencies are described and minimum proficiency levels are determined based on the judgement of subject matter experts.

What data are used in the anchoring method?

In order to define the international MPL, the anchoring method uses existing regional and international assessments which have been measuring learning across countries since 1995. Currently, 160 countries and territories have participated in international assessments such as Trends in International Mathematics and Science Study (TIMSS), Progress in International Reading Literacy Study (PIRLS), and Programme for International Student Assessment (PISA), and regional assessments such as the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) and Programme d'Analyse des Systèmes Educatifs de la CONFEMEN (PASEC) in Sub-Saharan Africa, the Laboratorio Latinoamericano de Evaluación de la Calidad de la Educación (LLECE) in Latin America, and the Pacific Islands Literacy and Numeracy Assessment (PILNA), and Southeast Asia Primary Learning Metric (SEA-PLM) in the East Asia/Pacific region.

Each of these regional and international assessments has a different set of questions and a slightly different definition of what it means to achieve a MPL in mathematics or reading. Consequently, it is not possible to directly compare the results of the various programmes. However, the anchoring method provides a baseline to make the results of all existing regional and international learning assessments comparable.

How does the anchoring method link assessments?

As this approach uses the results of existing assessments that have already been administered and reported, it does not require countries to administer a new assessment. Because some countries participate in more than one regional or international assessment, it allows researchers to link, or 'anchor' (non-psychometrically) the results of one assessment to another by using the results of countries that took both assessments.

For example, Colombia and Honduras participated in both the LLECE 2013 and PIRLS 2011. We can assume that the ability levels of the students taking these tests are roughly similar. With this new approach, the data can be anchored so we are able to conclude that a score of X on LLECE 2013 is the same as a score of Y on PIRLS 2011. Based on this relationship, we can take the scores of other countries in Latin America that did not take PIRLS 2011 and convert their LLECE 2013 scores into PIRLS 2011 scores.

### How does the anchoring method set a minimum proficiency level?

To determine how many students have reached the MPL in each country, we must set a benchmark, or proficiency cut-off point. Because of the wide range of learning levels around the world, it is difficult to set just one MPL. This is precisely the reason why there are so many different regional and international assessments: to accommodate the diversity in national curricula and learning levels. If the MPL is too low, some countries might place all children and youth above the minimum level. If the MPL is set too high, some countries may have few or no children above the minimum level.

For this reason, the anchoring method proposes two different international benchmarks for both mathematics and reading at the primary schooling level. The first, Basic Skills Benchmark, was derived from the SACMEQ assessment and is more appropriate for low-income countries, and the second, Standard Skills Benchmark, was derived from the TIMSS and PIRLS assessments and is better suited for middle-and high-income countries. There is only one secondary schooling benchmark, which was derived from PISA.

### What information can the anchoring method provide?

The anchoring method enables us to see the proportion of students reaching the MPL at both the Basic and Standard levels across all participating countries. **Figure 1** shows the proportion of students reaching the basic and standard benchmarks for primary mathematics by region.

**Figure 1. Proportion of students reaching the MPL, mathematics, primary education**
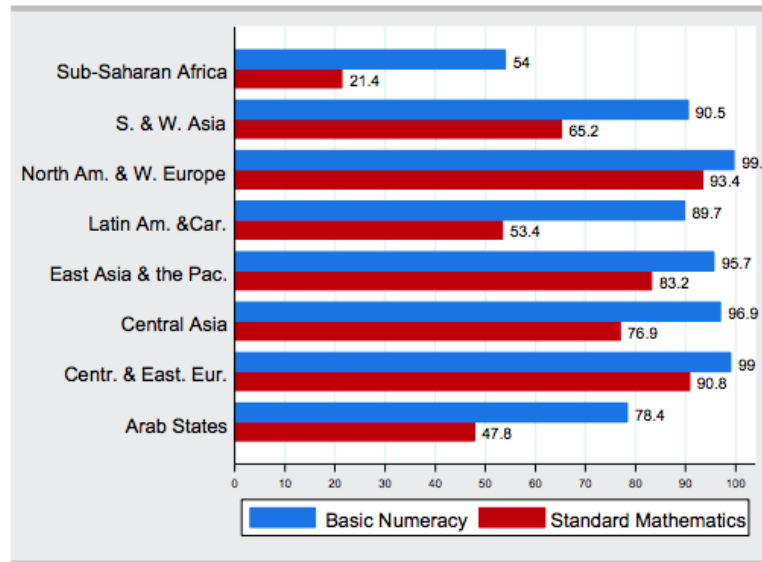
In addition to the reporting needs of Indicator 4.1.1, the anchoring method can also be used to examine equity issues such as the ratio of boys to girls in education, urban to rural students, and/or poor to wealthy students reaching the MPL. **Figure 2** shows the gender parity ratio for reaching the MPL in primary schooling.

Figure 2. Gender Parity Ratio for proportion of students reaching the MPL, primary education
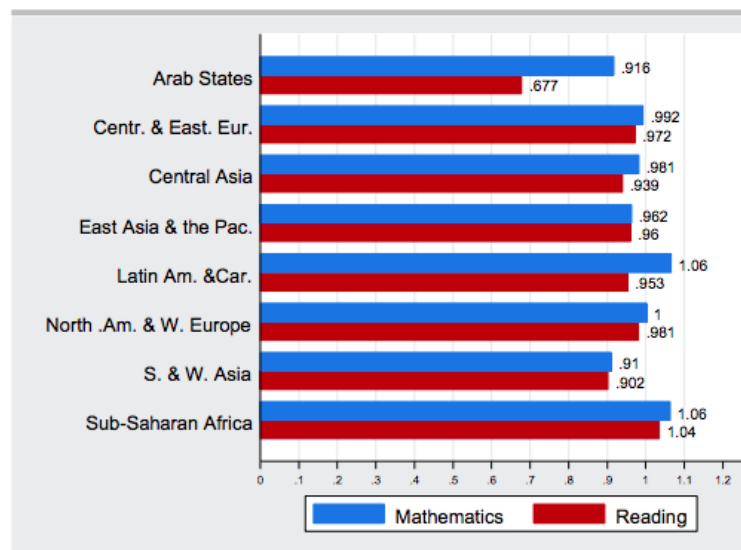
Finally, the anchoring method can be used to track growth over time for individual countries and compare that progress with other countries not participating in the same assessments. **Figure 3** shows trends in the proportion of students reaching the Standard MPL for mathematics in secondary education in a select group of countries since 1995.

Figure 3. Trends in proportion of students reaching Standard MPL for mathematics, secondary
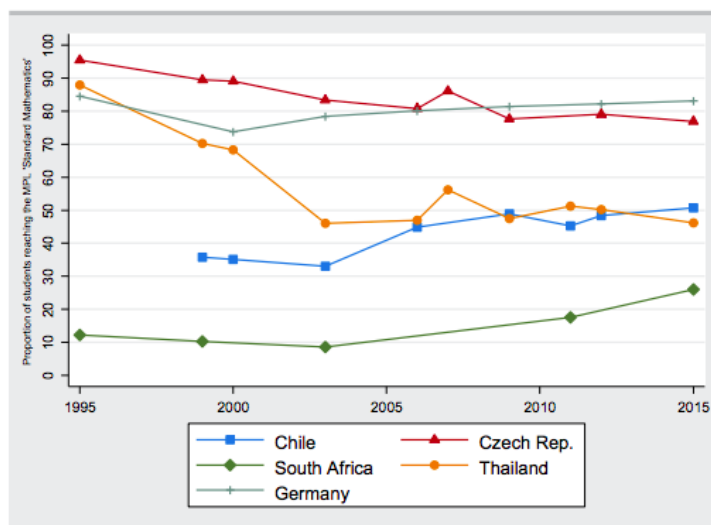
How can countries use the information from the anchoring method?

Linking existing assessments to a common scale and using it to define a MPL can help countries to understand where children stand nationally across time, and in relation to other countries. This knowledge can influence education policy and give stakeholders the tools to refine their curriculum so that children can meet the MPLs for their grade level in foundational reading and mathematics skills. And, as the information can be presented based on equity-related considerations, it can steer policy decisions so that children who are lagging behind can receive the help they need. The information generated by the anchoring method also enables countries to meet their global reporting obligations for SDG 4.

For more details, please read Mind the Gap: Proposal for a Standardised Measure for SDG 4–Education 2030 Agenda