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A World Unprepared: Missing Skills for Development

How far away is the world from ensuring that every child obtains at least basic skills? And what would it mean for world development to reach the goal of global universal basic skills? We address these two intertwined questions in a new study (Gust et al. 2024).¹ We draw on the individual-level test data from available international and regional student assessments to develop world estimates of the share of children not achieving basic skills in each country and then show the economic costs of these deficits.

The 17 separate Sustainable Development Goals (SDGs) emphasize a broad set of laudable development outcomes, ranging from eliminating poverty to conserving the oceans (UNESCO 2021). But achieving the hope of these broad improvements is highly dependent on expanding resources to pay for and bring about change. On this score, past evidence suggests that upgrading the skills of each country's population is the key to getting the necessary productivity improvements and economic growth (Hanushek and Woessmann 2016). We therefore focus on SDG 4 – ensuring equitable and inclusive quality education for all – which we believe is the key to developing the skills of a country's workforce and thus to addressing the other SDGs.

MEASURING SKILLS ON A GLOBAL SCALE

While very low learning levels have been highlighted for selected low-income countries (e.g., Pritchett 2013; Pritchett and Viarengo 2023), the limited country coverage of internationally comparable skill data means that it is unclear how many children globally currently fail to reach basic skill levels. Still, the universe of extensive –

¹ The underlying research paper, "Global Universal Basic Skills: Current Deficits and Implications for World Development," has just been published in the *Journal of Development Economics*. This summary is an updated version of a text first published on VoxEU.org.



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KEY MESSAGES

- Ensuring that all children in the world obtain at least basic skills is paramount for world development
- At least two-thirds of the world's youth do not even reach basic skill levels – i.e., the world is short of meeting the Sustainable Development Goal of universal quality education
- This is the result of our new study, which combines multiple data sources from international tests to conduct a cross-country analysis of basic skills using a common achievement scale
- Skill deficits range from 24 percent in North America and the European Union to 89 percent in South Asia and 94 percent in sub-Saharan Africa
- An economic analysis suggests that the world is missing out on over USD 700 trillion in economic output over the remaining century, or 12 percent of future GDP, by failing to reach the goal of global universal basic skills

but not directly comparable –achievement information could in principle provide a detailed picture of how far the world is from achieving basic skills for all children.

We define basic skills as the skills needed to participate effectively in a modern international economy, which we measure by mastering at least the most basic skill level of the Programme for International Student Assessment (PISA) – i.e., PISA Level 1 skills. This entails, for example, being able to carry out obvious routine procedures, but not employing basic formulae or making literal interpretations of results (OECD 2019).

We first combine test information from the various international tests. PISA and PISA for Devel-

opment (PISA-D) cover a total of 90 countries. The Trends in International Mathematics and Science Study (TIMSS) contributes 14 additional countries (that have not participated in PISA). An additional 20 countries are added by regional achievement tests – TERCE and SERCE in Latin America and SACMEQ and PASEC in sub-Saharan Africa. Two countries have participated in PISA on a sub-national basis – India and China. These 126 countries with direct assessments of students represent 85 percent of the world population and 96 percent of world GDP.

A central element of our analysis is the development of a method for reliably combining the available assessment information to place the countries of the world on a common achievement scale. Even though the different tests were not designed with that objective in mind, we show that it is possible to transform student-level achievement on all tests into a PISA-equivalent score while introducing minimal constraints on the underlying score distributions. Our method equates the scales of the different tests by using the student-level distributional information found in the group of countries that participate in each pair of test regimes.

Estimating achievement of basic skills in countries without representative participation in the international tests adds an additional level of complexity. For the two countries with no international assessments except for PISA in selected provinces or states – India and China – we use additional within-country achievement information to provide estimates of national achievement on the PISA scale. For countries that never participated in any of the international tests, we impute achievement using cross-country regressions of achievement on educational enrollment, GDP, and indicators of world regions and income groups.

Finally, the international tests provide data on children in school, but over one-third of the world's children are not in secondary school, so their skills are not measured. We use information from PISA-D and from the Programme for the International Assessment of Adult Competencies (PIAAC) to estimate the skill levels of children who are not in school (relative to children in school in the specific country).

Using these varied approaches, we can estimate achievement deficits in 159 countries with a population of at least one million or a GDP that is at least 0.01 percent of world GDP. These 159 countries cover 98 percent of the world population and 99 percent of world GDP.

SIX STYLIZED FACTS ON THE WORLD DISTRIBUTION OF BASIC SKILLS

Our results suggest that the world has a long way to go to reach global universal basic skills. The map in Figure 1 shows visually how the skills of countries vary. The world distribution of basic skills can be summarized in six stylized facts:

1. At least two-thirds of the world's youth are not obtaining basic skills.
2. The share of children not reaching basic skills exceeds 50 percent in 101 countries and rises above 90 percent in 36 of these countries.
3. Even in high-income countries, one-quarter of children lack basic skills.
4. Skill deficits reach 94 percent in sub-Saharan Africa and 89 percent in South Asia, but also hit 68 percent in Middle East and North Africa and 65 percent in Latin America.
5. While skill gaps are most apparent for the third of global youth not attending secondary school, 63 percent of the global youth who are in secondary school fail to reach basic skills.
6. Half of the world's youth live in the 35 countries that fail to participate fully in international tests (which includes India and China) and thus lack regular and reliable foundational performance information.

Table 1 provides the numbers for all country income groups and world regions. The results indicate that the lack of quality education in schools weighs much more heavily on the overall lack of skills than does incomplete school enrollment.

WHAT MISSING SKILLS MEAN FOR WORLD DEVELOPMENT

We use our skill measures to quantify the economic gains that the world could reap from reaching the goal of having every child achieve at least a basic skill level. Using estimates of the association between skills and long-run growth rates from existing empirical growth models with worker skills (Hanushek and Woessmann 2012), we project, country by country, the future path of GDP with improved skills.

The discounted added world GDP amounts to over USD 700 trillion compared to the status quo GDP trajectory over the remaining century. This economic gain from reaching the goal of global universal basic skills is over five times the current annual world GDP, or 12 percent of the discounted future GDP over the same horizon. Put the other way around, this amount documents the lost economic output due to missing the goal of global universal basic skills. Importantly, the gain from lifting all students who are currently in school to at least basic skill levels turns out to be more than twice as large as the gain from enrolling the children currently not attending school in schools of current quality levels.

Our work extends the existing literature on global skill measurement (e.g., SDG 4). Our method of combining achievement information from different international tests using the full underlying student distributions augments previous contributions such as Hanushek and Woessmann (2012), Patel and Sandefur (2020), and Angrist et al. (2021). Like Pritch-

Table 1

Basic Skill Deficits on a Global Scale

	Share of students below basic skills (1)	Share of children not enrolled in secondary school (2)	Share of all children below basic skills (3)
World	0.631	0.355	0.672
<i>By income group</i>			
Low-income countries	0.905	0.693	0.956
Lower-middle-income countries	0.813	0.440	0.858
Upper-middle-income countries	0.383	0.189	0.423
High-income countries	0.239	0.069	0.255
<i>By region</i>			
Sub-Saharan Africa	0.893	0.665	0.941
South Asia	0.850	0.402	0.892
Middle East & North Africa	0.639	0.195	0.679
Latin America & Caribbean	0.612	0.210	0.652
Central Asia	0.400	0.094	0.421
East Asia & Pacific	0.311	0.219	0.354
Europe	0.259	0.102	0.284
North America	0.222	0.069	0.239

Notes: Col. 1: Estimated share of current students who do not reach at least basic skill levels in math and science (equivalent to PISA Level 1). Col. 2: One minus net secondary enrollment rate. Col. 3: Estimated share of children (incl. those currently out of school) who do not reach at least basic skill levels in math and science.

Source: Gust et al. (2024).

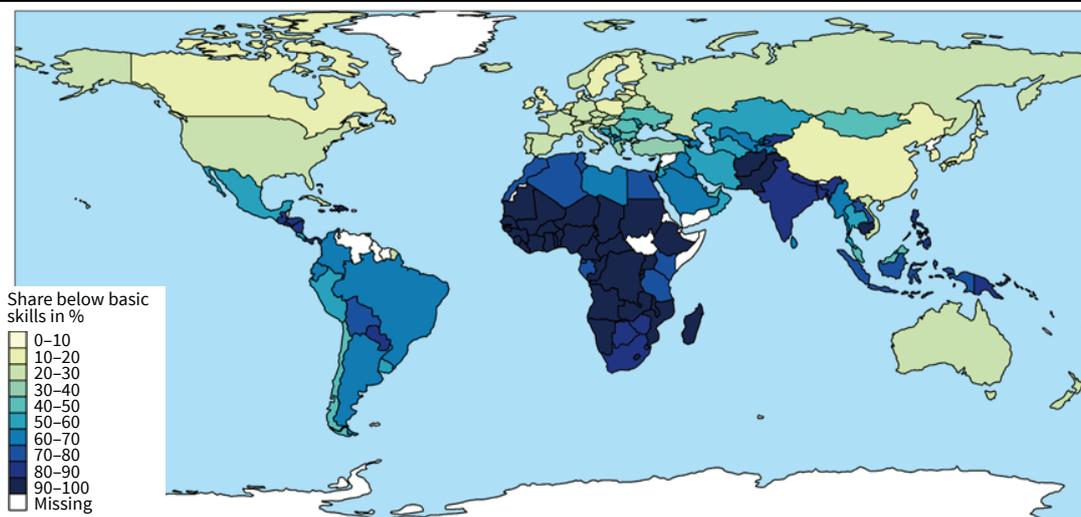
ett and Viarengo (2023), who focus on the extremely poor learning in a few developing countries, our results highlight the low level of learning outcomes of large shares of children in poor countries and extend the perspective by providing consistent estimates for the whole world. Following previous applications for OECD countries (Hanushek and Woessmann 2011, 2015 and 2020) and US states (Hanushek et al. 2017a and 2017b), our projection model provides a global perspective to the literature on human capital and economic growth.

POLICY CONCLUSIONS

All member states of the United Nations endorsed the Sustainable Development Goals in 2015. An essential element of these 17 goals was the call to ensure inclusive and equitable quality education for all. Because of the fundamental importance of education for economic development and, by implication, for meeting the other 16 SDGs, education is the cornerstone to the entire effort. Our results, which show that the world is short of meeting the goal of universal qual-

Figure 1

World Map of Lack of Basic Skills: Share of Children Who Do Not Reach Basic Skill Levels



Note: Estimated share of children (incl. those currently out of school) who do not reach at least basic skill levels in math and science (equivalent to PISA Level 1). Source: Gust et al. (2024).

ity education, underscore the urgent need for policymakers worldwide to prioritize and significantly enhance efforts toward ensuring quality education for all children.

The developing world faces the dual problem of access to and quality of schools. Over one-third of the global youth of secondary-school age do not attend school. But the fact that 63 percent of the world's enrolled students do not reach basic skills suggests that attendance at low-quality schools will not solve the problem of missing basic skills. Solving the school quality problem, of course, is not simple. The more developed countries have generally resolved school attainment issues, but they have not entirely overcome the quality challenges as significant shares of their students are still left behind.

Our analysis provides a global picture of the distribution of basic skills around the world, but it comes with uncertainty, particularly for the large part of the world that does not regularly participate in international testing. The neediest countries in the world do not routinely participate in either national or international tests. As a result, they have no information about the current level of skill development (as seen from the vantage point of the international economy). Nor do they have information about whether their schools are improving or not as measured in terms of international skill levels. Echoing the conclusions by the World Bank (2018), it would be a great service to world development if there were a regular, internationally standardized test of representative samples of students in all countries of the Global South. Just like what PISA has done for richer countries, such a globally comparative test would provide policymakers with much better information for focusing their energies and devising suitable policies. Ideally, the test would be both linked to the PISA scale and geared towards measuring basic levels, so that the tested content is relevant in countries that struggle to reach interna-

tional levels. Developing and funding assessment instruments benchmarked to international educational standards is likely to have much more long-run payoff than much of the current development aid.

REFERENCES

- Angrist, N., S. Djankov, P. K. Goldberg and H. A. Patrinos (2021), "Measuring Human Capital Using Global Learning Data", *Nature* 592, 403–408.
- De la Fuente, Á. and R. Doménech (2024), "Cross-Country Data on Skills and the Quality of Schooling: A Selective Survey", *Journal of Economic Surveys* 38, 3–26.
- Gust, S., E. A. Hanushek and L. Woßmann (2024), "Global Universal Basic Skills: Current Deficits and Implications for World Development", *Journal of Development Economics* 166, 103205.
- Hanushek, E. A., J. Ruhose and L. Woessmann (2017a), "Economic Gains from Educational Reform by US States", *Journal of Human Capital* 11, 447–486.
- Hanushek, E. A., J. Ruhose and L. Woessmann (2017b), "Knowledge Capital and Aggregate Income Differences: Development Accounting for U.S. States", *American Economic Journal: Macroeconomics* 9, 184–224.
- Hanushek, E. A. and L. Woessmann (2011), "How Much Do Educational Outcomes Matter in OECD Countries?", *Economic Policy* 26, 427–491.
- Hanushek, E. A. and L. Woessmann (2012), "Do Better Schools Lead to More Growth? Cognitive Skills, Economic Outcomes, and Causation", *Journal of Economic Growth* 17, 267–321.
- Hanushek, E. A. and L. Woessmann (2015), *Universal Basic Skills: What Countries Stand to Gain*. Organisation for Economic Co-operation and Development, Paris.
- Hanushek, E. A. and L. Woessmann (2016), "Knowledge Capital, Growth, and the East Asian Miracle", *Science* 351, 344–345.
- Hanushek, E. A. and L. Woessmann (2020), "A Quantitative Look at the Economic Impact of the European Union's Educational Goals", *Education Economics* 28, 225–244.
- OECD (2019), *PISA 2018 Results (Volume I)*, Organisation for Economic Co-operation and Development, Paris.
- Patel, D. and J. Sandefur (2020), "A Rosetta Stone for Human Capital", *CGD Working Paper* 550, Center for Global Development, Washington DC.
- Pritchett, L. (2013), *The Rebirth of Education: Schooling Ain't Learning*, Center for Global Development, Washington DC.
- Pritchett, L. and M. Viarengo (2023), "The Learning Crisis of Developing Country Elites: Lessons from PISA-D", *World Bank Economic Review* 37, 177–204.
- UNESCO (2021), *Global Education Monitoring Report 2021/2: Non-State Actors in Education - Who Chooses? Who Loses?*, United Nations Educational, Scientific and Cultural Organization, Paris.
- World Bank (2018), *World Development Report 2018: Learning to Realize Education's Promise*. World Bank, Washington DC.