

# **Adult Literacy and Schooling: A Comparative Analysis Using International Assessments**

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## **1. Introduction**

During the period between 1970s and 1990s, literacy, previously assumed as a skill mastered well enough to serve during school years and beyond, moved to the forefront of educational agendas in Anglophone modern societies (Lankshear et al, 2011). This shift was driven by Paulo Freire education movement; the 1970s literacy crisis; the development theories relating literacy with economic growth and social well-being; the emergence of ‘standards-testing-accountability-performance’ model of education reform; and the growth of sociocultural theory focusing on ‘literacy basics’ and ‘functional literacy’ (idem, 2011).

The relevance of literacy was reinforced with the expanding literature indicating positive relations between literacy and many aspects of individual well-being, notably health (UNESCO, 2018), political process, trust in others, participation in volunteer activities, labor market outcomes and contributions to economic growth (Hanushek and Woessmann, 2008, OECD, 2013, idem. 2018 Roseth et al, 2016).

At present, literacy assessments are an important part of educational decision making worldwide, yet studies comparing schooling and literacy using international assessments have recently flourished. Our study builds on this debate, aiming to contribute to the literature and evidence for policy.

Previous studies analyzing the relation between schooling and literacy, using similar international assessments for modern countries - Survey of Adult Skills (PIAAC) – (Calero et al, 2019, OECD, 2013) and low- and middle-income countries - STEP Skills Measurement- (Roseth et al, 2016), have indicated that, in virtually all countries, educational attainment is positively related to performance. However, there is a significant overlap in the distributions of literacy skills among individuals with different years of schooling or levels of educational attainment (OECD, 2013).

Considering cohort effect using PIAAC data, Calero et al (2019) indicated that age accounts for 46% difference in literacy skills between two selected age groups (61-65 years, 31-35 years), whilst change in quantity of schooling account for 45% of the difference in literacy. Also, the contribution of completed secondary education to literacy in comparison to primary is larger than tertiary compared to secondary.

Studies that used the Demographic Health Survey (DHS) estimated a weak correlation between schooling and literacy, demonstrating that a woman’s educational attainment, or lack of it, does not always tell if she can

read (Smith-Greenway, 2014, Spaul et al, 2015, Pritchett et al., 2017). Furthermore, the data used on these studies had a limitation that generated bias on the results, as women who had secondary education were assumed to be literate, hence, did not take the literacy test (Pritchett et al, 2017).

All in all, the studies with PIAAC, STEP and DHS have shown that deficits from learning are often not primarily driven by deficits from enrollment and grade attainment. However, it stands out from these studies the significant share of adults with lower levels of literacy in all education attainment levels. For DHS data this analysis is more straightforward as there is only one literacy test – reading shorts sentences. As for STEP and PIAAC, the literacy tests have different hierarchies, ordered by complexity. Often the studies analyze literacy considering only adults who passed the first level, a core literacy test, disregarding the adults at the lower end of literacy scales. Therefore, for these adults, there is a lack of knowledge about the relation between schooling and literacy and other possible determinants of their literacy.

Another aspect overlooked on these studies is that, if the matter of quality education is discussed so, qualitatively, an adult who never had access to school is distinct from one that dropped out before completing the first grade, as it is closely related to access to education. Along with this issue, a study that considers only level of attainment will not further understand the effect of additional years of schooling to literacy levels. Considering the heterogeneity in education within and between countries in PIAAC, STEP and DHS, it is reasonable to suppose that the gain in years of schooling might be significant to literacy, besides the completion of education levels.

Finally, most of the literature (OECD, 2013, Roseth et al, 2016, Smith-Greenway, 2014, Spaul et al, 2015, Pritchett et al., 2017) comparing schooling and literacy with suggests education policy to improve school quality and lifelong learning to tackle gaps and disparities between schooling and adult literacy. However, there is a lack of evidence to inform policy on the interplay between lifelong learning and the schooling-literacy relation. Calero et al (2019) contributed to fill this gap with estimations for participation in non-formal learning and skilled occupation, which had significant positive effects on the literacy tests, controlling by level of education.

With global population ageing, globalization, digitalization, large shares of illiterate adults and social inequalities, the improvement of school quality and lifelong learning is fundamental. There is strong evidence on adult learning reducing previous inequalities in educational attainment and helping reducing inequalities in modern countries (Blossfeld et al, 2014), however, only a minority of adults engage in formal or non-formal learning over the course of a year (OECD, 2018). In low- and middle-income countries it was estimated that the increase in the overall adult literacy rate is due to literate youth becoming adults, rather than illiterate adults becoming literate (Barakat, 2016). For the latter, there is scarce attendance on adult education programs (World Bank, 2018). Besides attending programs, the use of literacy skills in and out of work are important for the

skills acquired in education not to atrophy (ibid.) and to improve literacy (Hull et al, 2001, Lankshear et al., 2011).

### 1.1. Objective

The objective of this study is to do a comparative analysis between adult literacy and schooling using international assessments, to know: Demographic Health Survey (DHS), STEP Skills Measurement, Survey of Adult Skills (PIAAC). The specific research questions are: (1) How does literacy tests, in the referred dataset, compare with each other in terms of conceptual and theoretical framework and what they purportedly measure? (2) Is it possible to establish common ground between DHS and STEP/PIAAC in order to expand the scope of analysis? (3) What is the relation between literacy and schooling, when considering the different assessments? (4) What are the effects of adult learning and use of skills on the relation between literacy and schooling?

### 2. Data, sample and measures

In this section we present the selected data and proposed methodological approach for the analysis. The data for the analysis are from the surveys Demographic Health Survey (DHS) – round seven, STEP Skills Measurement and Survey of Adult Skills (PIAAC).

Table 1. Selected data for analysis

Survey	Sample	Countries	Education Variables
Demographic Health Survey (DHS) (2015-2018)	Women/Men 15-49	Afghanistan, Albania, Angola, Benin, Burkina Faso, Burindi, Cambodia, Chad, Egypt, Ethiopia, <b>Ghana</b> , Guatemala, Guinea, Haiti, India, Jordan, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Maldives, Myanmar, Mozambique, Nepal, Nigeria, Pakistan, Rwanda, Senegal, Sierra Leone, South Africa, Tajikistan, Tanzania, Timor Leste, Togo, Uganda, Zimbabwe.	-Reading sentence (Applied to all respondents up to Completed Secondary Education) -Years of schooling *Ever attended school *Attended non-formal education *Frequency that reads newspaper
STEP Skills Measurement (2012, 2013, 2015)	Women/Men 16-65	Armenia, Bolivia, China, Colombia, Georgia, <b>Ghana</b> , Lao, Macedonia, Ukraine, PDR, Philippines, Sri Lanka, Vietnam.	-Paper-based assessment core (4 literacy tasks) -Computer-based assessment core (3 literacy tasks) - Reading components (vocabulary, sentence, passage) - Years of schooling *Participated in training courses *Ever attended school *Frequency that reads: at work; out of work; newspapers/magazines
Survey of Adult Skills (PIAAC) (2008-2013)	Women/Men 16-65	24 OECD countries and 5 partners (Cyprus, Russian Federation, Jakarta, Lithuania, Singapore)	- Years of schooling *Participated in training courses *Ever attended school *Frequency that reads: at work; out of work; newspapers/magazines

The conceptual and empirical comparisons between literacy assessments will consider:

- 1) DHS literacy test: Reading short sentences in a card in the local language.
- 2) STEP literacy: Section A. Reading Components (Print Vocabulary; Sentence Processing; Passage Comprehension); Section B. Core Literacy (4 items)
- 3) PIAAC literacy tests: Paper-based assessment core (4 literacy tasks); Computer-based assessment core ICT test (3 literacy tasks) (stage 2); Reading components (Print Vocabulary; Sentence Processing; Passage Comprehension).

We will compare the literacy tests in terms of their conceptual and theoretical framework and what they purportedly measure. The comparison is supported on literacy concepts and theories (e.g Lankshear et al, 2011, Shaw, 2017, Perry et al, 2018) and in the surveys' manuals and reports (OECD, 2013, id., 2018, UNESCO, 2008, World Bank, 2014, Croft et al, 2018). After that, it will be empirically tested the difference between the assessments using data for Ghana (DHS and STEP).

This study advances in the analysis with DHS data, using the DHS-7, applied from 2015-2018, that included literacy tests for all respondents in the sample. Most studies use only the sample with female for literacy analysis (Smith-Greenway, 2014, Barakat, 2016, Pritchett et al., 2017), but Spuall et al (2015) did a comparative analysis including female and male. It will be tested the representativeness of the sample for males before including in the analysis.

To predict the relationship between literacy and schooling we will estimate linear regression models, besides doing the analysis of descriptive statistics. It will be investigated the possible confounders of that relation between schooling and literacy, considering also the effects of frequency reading a paper and attendance to adult learning program. The models will control for age, sex and country of residence.

### **3. Preliminary results**

Exploratory analysis with the data (DHS, STEP, PIAAC) have shown a large variability within the core assessment within and across-countries, supporting further research and indicating also that the level 1 at PIAAC literacy scale shades a rather heterogeneous group.

Also, comparing the data for Ghana (STEP and DHS), controlling for age, sex and place of residence, the preliminary results indicate a supposed correspondence between the individuals that were able to read (DHS) and individuals at the lower levels of the reading components and on the core assessment. These results will be further tested, after the theoretical analysis.

Results for linear regression models with Ghana indicated positive associations between tested literacy - reading at DHS and sentence processing at STEP - and years of schooling – including the distinction between those who have less than one year from those who never attended school. When controlling for sex

and age the relation between literacy and schooling don't change significantly. However, when adding frequency of reading there was a positive and strong effect on literacy, larger than schooling for some countries, and reduced significantly the effect of schooling on literacy. This effect was stronger for older cohorts. Attendance to non-formal training had significant effects on the studied relation for the younger cohorts. Also these results will be overviewed and further explored during the progress on this work.

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