

Education systems, education reforms, and adult skills in the survey of adult skills (PIAAC)

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This study examines how different education systems fare in equipping individuals with foundation skills. The importance of this issue lies in the well-acknowledged evidence that *skills beget skills* and it is the foundation skills that will help individuals regain new skills quickly in a fast changing technology-rich environment. The lack of ability to re-learn new skills prevents individuals from taking advantage of technological advances and from fully participating in the labour market. Thus, the strength of initial cycle of formal schooling in cultivating foundation skills in literacy and numeracy becomes a concern for policy makers, and an important issue to examine for researchers.

In particular, education systems differ substantially in the level of tracking students by ability or career aspirations, and the prevalence of vocational education. These two aspects of school system designs are most relevant features affecting skill accumulation, either through peer effect, curriculum content or teacher's effort. This study investigated how these features of formal education systems moderate the return to schooling measured by skills and examined how education reforms affect the accumulation of foundation skills in the long run. To do so, we coupled PIAAC 2012 and 2014 data with data from two other sources on education system characteristics and education reforms to examine these relationships.

Results suggested that education systems with strong orientation towards vocational training exhibit high mean scores in both numeracy and literacy. However, a strong vocational education orientation appeared to negatively moderate the returns to schooling measured by PIAAC skills. In other words, each additional year of schooling was associated with smaller gains in numeracy and literacy in education systems that are more vocational oriented. The analysis on the impact of education reforms towards opening university access for vocational high schools suggested that these reforms affected the lower deciles rather than the top decile of individuals along the skill distribution when numeracy was concerned. Thus, the opening up reforms reduced the skill inequality between individuals at the bottom and top of the numeracy skill distributions.

Early tracking as the other salient feature of education system design did not have significant effect on the average performances of PIAAC numeracy and literacy. In examining the effect of education reforms towards de-tracking, our results suggested that raising tracking age positively affected individuals at the bottom three deciles; yet the effects on individuals at the top deciles were negative. Overall, postponing tracking significantly reduced skill inequalities both in literacy and numeracy. The reduction appeared to come from the negative effects on individuals at the upper half of the skills distribution.