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## Special Issue for Oxford Review of Education

### School Quality Counts: Evidence from Developing Countries

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In 2000 the Millennium Declaration issued by the United Nations identified poverty reduction as a main development goal for the twenty-first century. More specific goals were set by the international community in 2002, including the achievement of universal primary education by 2015. It was in this context that the Young Lives study was established in 2001. Through extensive household, school and community surveys, the Young Lives study<sup>1</sup> follows 12,000 children from two age cohorts in Ethiopia, India, Peru and the state of Andhra Pradesh in India. These comprise 2,000 children in each country born in 2001-02 (the younger cohort) and 1,000 children born in 1994-95 (the older cohort), providing evidence on the evolving relationships between education and poverty during childhood in comparative perspective.

Young Lives' combined data constitute a unique longitudinal dataset of linked household and school information stretching from infancy to young adulthood. This special issue employs this evidence to examine how poverty, access to education and school quality combine over the life-course of the child to shape educational experience, outcomes and life-chances; with special reference to the methodological advantages afforded by a dual cohort longitudinal approach across four countries.

The overarching research question addressed by the papers in this special issue is:

*What is the role of educational experience in mediating between children's backgrounds and early life experiences and their later outcomes; and what are the implications for inequality and intergenerational poverty?*

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<sup>1</sup> See [www.younglives.org](http://www.younglives.org)

Since the Millennium, Ethiopia, India, Peru and Vietnam have experienced rapid economic growth, while the benefits of growth have been shared somewhat unequally. Childhood poverty on absolute measures has declined in each country during the life of the study, and educational access has improved, in some of the study sites dramatically. Nonetheless, trends in inequality are more ambiguous, varying across the study sites and countries; drawing attention to key differences in both the environments and policies which shape the ‘gaps’ between more advantaged and less advantaged groups; including those relating to the nature of educational access and quality across contexts and over time. Moreover, equitable opportunities for education of good quality are likely to appear among a revised set of Millennium Development Goals post 2015, not least because a majority of children are now enrolled in school in all but a handful of countries, drawing attention to levels of and inequalities in learning outcomes and school quality.

In principle, improvements in educational access provide for the acquisition of the skills that enable individuals, households, communities and countries to adapt to a fast changing world. Rising enrolment levels have not, however, necessarily been accompanied by improvements in the quality of schooling and level of learning outcomes. The papers in this issue show how educational experience, achievement and progression through the grades of schooling are shaped by both school and home factors. Quality schooling for the least advantaged can serve to mitigate the longer-term effects of early-life disadvantage and to develop the key cognitive and non-cognitive skills which prepare young adults for productive livelihoods and future well-being. While schools and pre-schools appear to reinforce or perpetuate gaps between more and less disadvantaged groups in some cases, they can also mitigate inequalities. Much depends on the relationship between home backgrounds and school quality and the relative importance of school effects on learning and skills development, when compared to home background effects.

The body of evidence on educational achievement in developing countries has grown substantially since the 1960s. In 1959 the International Association for the Evaluation of Educational Achievement (IEA) launched a pioneering pilot study of 13 year old students in 12 countries (see Forshay et al., 1962), which was followed by the First International Mathematics Study (FIMS) in 1964 and then by several others in the 1970s and 80s including the Pre-Primary Project (PPP) – an early longitudinal study (1986-2003). This work led to the Third International Mathematics and

Science Study (TIMSS) first conducted in 1994 and stimulated other repeated-cycle comparative studies including the Programme for International Student Assessment (PISA), first conducted in 2000 and the Progress in International Reading Literacy Study (PIRLS) first conducted in 2001. Few developing countries were included in earlier studies, although more recent studies have included a growing number, so that since 2000 the body of cross-sectional evidence from comparative learning assessments for lower income countries has increased. In addition, a number of important regional assessments have been conducted, focused on low and middle income countries, including by the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ), the Programme d'Analyse des Systemes Educatifs de la CONFEMEN (PASEC) and the Latin American Laboratory for Assessment of the Quality of Education (LLECE). Further, a number of other important assessment approaches adopt a 'smaller quicker cheaper' (Wagner, 2011) methodologies less directly focused on strict comparability, including the Early Grade Reading Assessments (EGRA) and Annual Status of Education Reports covering the states of India (ASER).

A growing body of literature draws on the international comparative data to explain differences in student performance and school effectiveness across countries (see Lee et al., 2005; Fuchs and Woessman, 2008; Marks et al., 2006; Schmidt et al., 2001; Michaelowa, 2003), while a smaller body of evidence examines issues of educational progression over time, using a handful of single country and single cohort longitudinal studies (e.g. Taylor et al, 2010, Brooke and Bonamino, 2011). An early seminal paper (Heyneman and Loxley, 1983) analysed the available cross-sectional evidence from developing countries at the time to address the question of the relative importance of school quality compared to family backgrounds for learning achievement, concluding that the lower the income of a country, the weaker the influence of family backgrounds and the greater the influence of school and teacher-level characteristics, calling into question the notion, formed from studies of developed countries, that school effects are typically somewhat weaker than home background effects. Economic growth (especially where accompanied by rising inequality) and the mass expansion of schooling since the 1990s may be expected to have shifted the general pattern observed by Heyneman and Loxley, but, regarding the role of education systems, the ways in which expansion has occurred is especially important, specifically in relation to the extent of 'segregation' of pupils between schools and of variation in the quality of provision.

Nonetheless, separating and disentangling the influences of home, school, individual ability and prior attainment and of peers is methodologically challenging and ideally requires comprehensive data including longitudinal measures of attainment plus linked child background, school, peer and teacher quality indicators. The growing evidence from randomised control trials (RCTs) provides valuable insight into the impacts of individual interventions in particular contexts (see Kremer et al., 2013) but considerable differences between contexts limit the generalizability of findings. And while cross-country studies of ‘learning production’ reveal some key features of effective schools (see Glewwe et al., 2011), understanding of differences in productivity between education systems remains limited, not least because of the complex inter-relationships between ‘inputs’ and with context and policy.

Moreover, since few studies of learning achievement sample children at the same ages both in and out of school, and the number of children with no schooling experience is fast diminishing in many countries, the evidence on the benefits of school attendance for learning development is limited. The Young Lives design has enabled analyses comparing learning between groups within its cohorts exposed to no schooling, timely enrolment and progression; and to delayed and interrupted schooling. In OECD countries where most children enrol in school on time, where measures of learning achievement are conducted in school rather than home settings and where most children are enrolled for at least 10 years, studies of the impact of the initial years of schooling are less feasible. Moreover, because children tend to start school at the official age of entry in most OECD countries, the effects of age and schooling on learning outcomes cannot be separated. At a time when the focus of much international education research and intervention is shifting to school quality it is important to retain a focus on the learning effects of school attendance per se, especially in those countries where enrolment in the basic cycle of education is not universal.

*Young Lives* capitalises on the methodological and conceptual advantages of large-scale quantitative cross-sectional, cross-age and cross-country designs. It also complements quantitative methods of analysis appropriate for large scale surveys with small-scale qualitative methods employed in sub-studies (Camfield, Streuli and Woodhead, 2008). However it enjoys the added advantage of a longitudinal design (Bynner and Joshi, 2007). Longitudinal studies of childhood were established in Britain in 1946 and were followed by studies of cohorts born in 1946, 1958

and 1970 and 2000. The last of these, the ‘Millennium Cohort Study’ follows a cohort of around 19,000 children in the UK of a similar age to Young Lives’ younger cohort (Dex and Joshi, 2010). A wide range of outcomes have been studied, including education and labour market outcomes (e.g. on the 1958 cohort see Sullivan, Joshi and Leonard (2010; 2011)). Longitudinal studies in many other OECD countries have followed (for examples see [www.eucconet.com](http://www.eucconet.com)). Some studies in OECD countries involve more than one cohort (for example the Longitudinal Study of Australian Children and ‘Growing Up in Ireland’), although none is conducted simultaneously across two or more countries. Fewer studies exist in developing countries, although notable examples have been the subject of much analytic attention, including for example the Gansu Survey of Children and Families in China, the Cebu Longitudinal Health and Nutrition Study (CLHNS) in the Philippines and the 1982 Pelotas birth cohort study in Brazil. Young Lives’ longitudinal, dual cohort *and* comparative design renders it unique in the panoply of surveys of children.

Young Lives employs longitudinal designs of two types. The first involves repeated measures of aspects of the same children’s development (e.g. their cognitive development, health, nutrition and social support), measured in their homes and gathered alongside key household and community-level development indicators. This design aids our understanding of causation, prognosis, stability, change and development in relation to a range of outcomes, including cognitive development and health, and ultimately poverty status. Factors that drive disadvantage, resilience and success can be traced within each of the two birth cohorts. By studying two age cohorts, longitudinally and simultaneously, cohort and time-period effects can be separated and extensive sub group analysis can be conducted within cohorts, across cohorts and across countries. The first longitudinal design enables analysis of the cognitive development of children in school as well as that of children who have never attended or who have dropped out of school, so, as noted already, we are able to explore the impact, for example, of years of schooling and late/on time enrolment in school on cognitive development of children of the same age.

The second type of longitudinal design involves repeated measures of learning achievement during the school year. This design approach focuses on the school experience of the Young Lives children within a period of nine months during which school and teacher-level influences may be

considered largely ‘fixed’. In the presence of extensive longitudinal data on children’s early development and home backgrounds, this enables us to explore the influence of a range of in-school and out-of-school factors that explain learning progress during a school grade with well-defined curricular content. This approach resonates with a body of literature of school effectiveness in, mainly, OECD countries.

Linking school and household surveys is both informative and challenging. In developing countries, age-cohorts of children often attend school across a range of grades, and in some contexts, such as Andhra Pradesh, even a highly clustered sample of children attends a large number of schools of diverse types. Tracing children from home to school is in such cases logistically complex, and school and class-level analysis requires a balanced sample of children in classes and schools, which a household-based sampling frame is unlikely to produce automatically. In addition to Young Lives, notable examples of cohort studies which have attempted linked school-level data collection include the Millennium Cohort Study and the NEPS study in Germany. Nonetheless, logistical challenges in European studies have been considerable in some cases, including in relation to poor teacher response-rates, dispersion of children between schools and difficulties with linking to administrative data from the national education systems.

The papers in this special issue offer the reader insights on education and learning that capitalise on one or more of these design dimensions. In the introductory paper Jo Boyden and Zoe James outline the conceptual and methodological features of Young Lives and its potential for analysis of educational trajectories, and of the influences that shape them. They address the logistical, epistemological and ethical challenges of ensuring the integrity of the panel data and cohort, maintaining an appropriate degree of consistency across countries in terms of design and measurement, without compromising policy relevance at the national level, and balancing the sometimes competing demands for cross-sectional and longitudinal evidence.

Abhijeet Singh exploits the longitudinal character of the data set to show how attendance in private and public pre-schools in Andhra Pradesh, India influences the receptive vocabulary and quantitative skills of children by the time they are ready to enter primary school. His analysis shows that large gaps in the test scores of children in private and public sector education are evident at the point of entry to formal schooling and are associated with previous attendance in private and

public preschools. Attendance at private pre-school is associated with parental backgrounds – but even after controlling for home background the gap in performance remains significant.

Santiago Cueto et al. also exploit the longitudinal character of the study in an analysis of the relationship between socioeconomic status (SES) measured at the age of 1, opportunities to learn (OTL) and achievement in mathematics 10 years later in the context of Peru. Opportunity to learn mathematics is measured through the number of hours of mathematics classes per year, curriculum coverage (the number of exercises attempted by students), the quality of teachers' feedback, and level of cognitive demand of learning tasks, the last three of which are measured through a qualitative analysis of the notebook and workbook exercises attempted by fourth grade students. The analysis shows a consistent association between the number of exercises attempted by students and achievement in mathematics. Significantly, home background at age 1 not only predicts of achievement at age 10 but it is also predicts of the number of exercises attempted by children. Overall, the findings of the paper illustrate a highly unequal educational system in which relatively poor children have fewer opportunities to learn in school, pointing to an important area of policy concern regarding equity.

The paper by Zoe James and Martin Woodhead employs the dual-cohort longitudinal character of the study to explore changes *over time* in the way that parents make school choices for their children in Andhra Pradesh, India and deepens our understanding of trends revealed by household surveys through insights generated by a qualitative sub-study. Much of the single cohort cross-sectional literature on 'school choice' presents such choice as if it were a single decision-event made at the point of entry to school. Building on earlier analysis of the two cohorts which demonstrated an increase in private school participation rates from 24% of 7-8 year olds in 2002 to 44% of 7-8 year olds in 2009 (Woodhead *et al*, 2013), they proceed to demonstrate in this paper the dynamic and multiple character of school choice and an increasing propensity of children to change schools during the early primary school years. Most of these changes are from government to private schools, or between private schools, but the paper also reports changes between government schools among the poorest households seeking better yet affordable opportunities for their children. Analysis of qualitative evidence points to an array of factors that predispose parents to move their children from one school to another. Changing household resources and perceptions



of quality combine with changing educational landscapes, described as ‘unstable hierarchies of relatively unregulated private schools along with one or more government schools that are largely unaccountable to parents even in terms of teacher attendance’ and which result in young children moving from one educational setting to another with, as yet, unknown consequences for children’s long term learning and well-being.

The paper by Melanie Frost and Angela Little employs the dual cohort and large-scale cross-sectional design of the school-based survey in Ethiopia in an exploration of learning practices in 776 mathematics classes across five regions of Ethiopia, comprising over five thousand students. The study explores recent changes in Ethiopian education policy in relation to pedagogy and primary education and, through evidence derived from time-based classroom observations, assesses the extent to which policy shifts are reflected in observed practices. The inclusion of children from two age cohorts enables the authors to assess the extent to which the advocated policy shift - away from teacher-oriented and towards student-centred learning methods is reflected in the first and second cycles of primary education. Unsurprisingly the official policy target – that 30% of class time be spent on student-centred activity – is met in neither cycle of schooling. More surprisingly, more time is spent ‘off task’ than in student-centred activity. The large-scale nature of the school survey, involving 59,974 discrete observations, enables us to go beyond the insights offered by smaller, albeit often more in-depth studies of pedagogy, to explore the school, class and teacher level correlates of different types of learning practice through multi-level discrete-time hazards modeling, a statistical approach developed initially in demography. Teacher level characteristics were the best predictors of outcomes. In both cycles of primary education a student is more likely to be ‘on task’ rather than ‘off task’ if taught by a teacher with a diploma or a degree, who has not been absent recently or has received supervision within the last four weeks; and is more likely to be engaged in student-centred rather than teacher-oriented activity if taught by a female teacher with a diploma. In the first cycle, ‘on task’ activity is associated with female teachers; in the second cycle with male. Physical resources at school and classroom level were of less importance than teachers. However, in the first cycle student-centred activity is associated with class sizes of less than 26; in the second cycle with class sizes of more than 26.

Caine Rolleston and Sofya Krutikova make use of longitudinal school survey data on an expanded sample of pupils from Vietnam. The sample of more than 3,000 pupils is formed of a sub-sample of the younger cohort of children plus their class-peers, who were included in the survey to ensure a balanced sample at class and school levels for analysis of issues of school-effectiveness. Surveys, including curriculum-based tests, were conducted at the beginning and end of primary Grade 5, at the schools attended by younger cohort pupils in that grade. The paper examines the effects of home background and school-level influences plus class-peers' backgrounds on learning progress during one school year, when teacher and school factors are largely held constant, linking the findings to recent policies in Vietnam to ensure 'minimum quality' levels at primary level, including a number of 'foundational opportunities to learn'. Results show that in terms of basic standards there is considerable equality of opportunity in the Vietnamese system. While disadvantaged pupils do perform less well, there is fairly weak evidence to suggest that schooling contributes substantially to a widening of achievement gaps during Grade 5. Nonetheless, with regard to more sophisticated 'opportunities to learn' such as related to computers and internet technology, advantaged pupils do have much better access, and the same is true in relation to learning opportunities which are directly linked to home resources such as attendance at paid 'extra classes'. The Vietnamese example provides a potential example of how an equity-oriented policy such as 'minimum standards' may serve to improve the function of schooling to mitigate learning gaps which result from home-advantage. Attention to such standards ensures the direction of resources to areas of greater need, potentially helping to 'close the gap'.

The final paper, by Caine Rolleston, exploits the cross-country as well as the longitudinal cohort character of Young Lives in order to explore how gaps in learning achievement linked with socio-economic background evolve over time in comparative perspective, across the 5-15 age range. The paper addresses the relationship between basic cognitive skills outcomes and progress measures and various forms of reduced or interrupted enrolment and a direct measure of years enrolled in school. The selection of highly comparable skill outcomes and home background indicators allows comparison across the study countries in terms of learning levels and development. Despite concerns about school quality, this paper shows that years of enrolment in school are a strong predictor of cognitive skills development and that interrupted and late enrolment are strongly associated with poor learning. Pupils typically enroll early in Andhra Pradesh and initially make good progress, but at later stages, beyond the age of 12 learning

increments are small compared to Vietnam, where cognitive skills develop more consistently over time. Ethiopia shows relatively low levels of learning and leaning progress, but continues to face important enrolment challenges. Relatively poor performance in the highest income and highest spending country on education, Peru, is perhaps somewhat more surprising but is linked to high levels of inequality. Important lessons can be learned from cross-country analyses which place national patterns in much broader context. The apparent ‘mismatch’ between curricular expectations and pupils’ learning performance in maths in Andhra Pradesh, India, for example, is instructive by comparison with Vietnam. In Vietnam, despite a broadly similar curriculum, pupils of the same age make good progress, drawing attention not to curricular inappropriateness per se, but to the effects of poor linkages between curricula content and actual levels of prior learning.

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