Working Paper 100

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An International Study of Childhood Poverty

Making Progress:

Report of the Young Lives School Survey in Vietnam

Caine Rolleston, Zoe James, Laure Pasquier-Doumer and Tran Ngo Thi Minh Tam

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About Young Lives

Young Lives is an international study of childhood poverty, following the lives of 12,000 children in 4 countries (Ethiopia, India, Peru and Vietnam) over 15 years. **www.younglives.org.uk**

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Executive Summary

Introduction

Achieving universal access to good-quality basic education is a key priority for Vietnam, as it is for other rapidly developing countries. Improving educational opportunities may be expected to play a role in reducing economic and social inequalities. However, school is only one set of influences on a child's learning development, and even in an equitable education system, home background and contextual influences may perpetuate or widen differences in learning progress between more and less advantaged pupils.

This report provides new evidence on these issues from Young Lives – a longitudinal study of childhood poverty following the lives of 12,000 children in Ethiopia, India (in the state of Andhra Pradesh), Peru and Vietnam over 15 years (www.younglives.org.uk). The analysis draws on an on-going longitudinal survey of the Young Lives children and their households conducted since 2002 plus a dedicated school survey carried out during the school year 2011–12. In the school survey, data were collected from 3,284 Grade 5 pupils, in 176 classes in 56 schools or 92 school sites (when satellite sites are considered separately from the main school). Children completed a background questionnaire and were tested in mathematics and Vietnamese at both the start and end of the school year. Each test had 30 multiple choice questions, designed to test knowledge of the curriculum. Both tests contained a number of common (anchor) items to enable measurement of progress over the year.

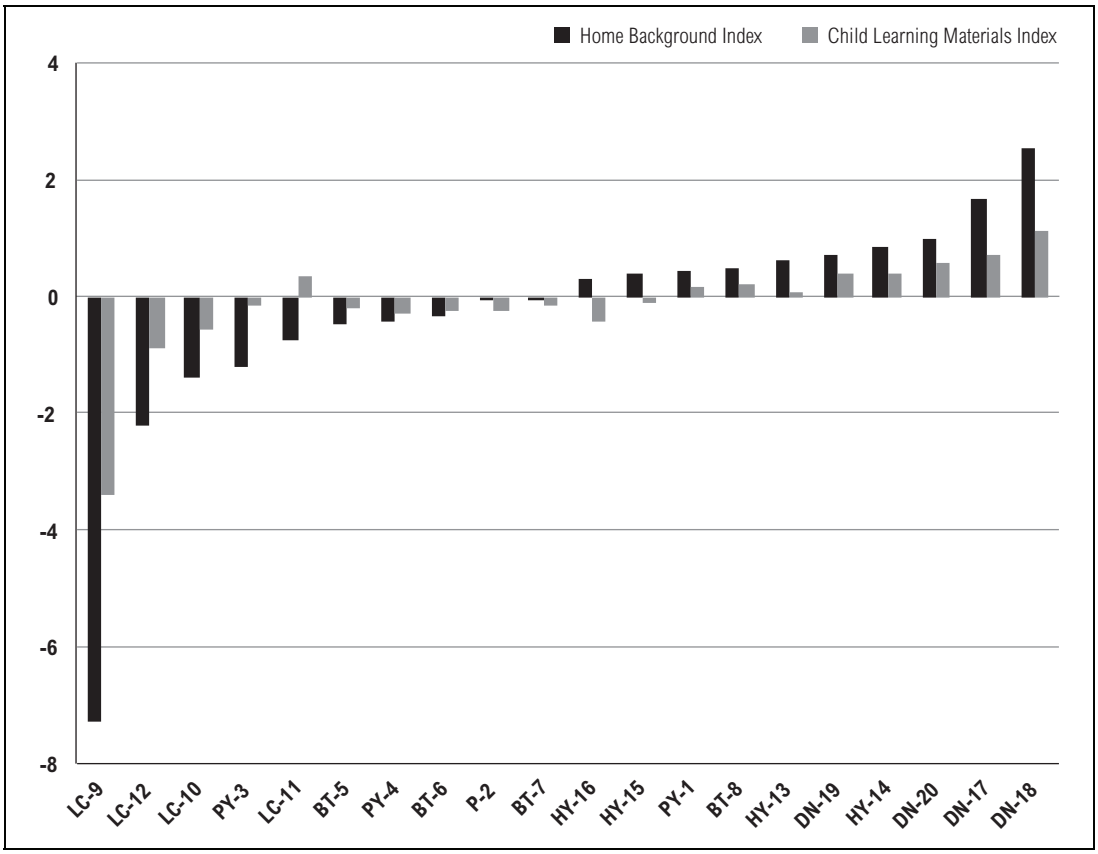
This design makes it possible to answer key questions about children's learning and learning progress as well as about the effectiveness of schools and teachers (often referred to as the 'value-added' of schooling). The study was conducted in the 20 Young Lives study which are situated in five selected provinces (Ben Tre, Da Nang, Hung Yen, Lao Cai, and Phu Yen). The unique combination of longitudinal data about the children and their backgrounds and the focus on school effectiveness adds to the evidence available from existing cross-sectional studies conducted by MOET and the World Bank, and is the first of its kind in Vietnam.

Specifically, we examine how children's progress in mathematics and Vietnamese reading during primary Grade 5 is linked to their schooling and home backgrounds, and how these factors influence the evolution of 'learning gaps'.

Pupils' backgrounds shape opportunities to learn

Pupils in areas of low home advantage typically report having lower levels of access to learning materials (illustrated in Figure 1), and are in schools and classes with poorer facilities. These differences are widest when comparing the very poorest children with the rest. The most disadvantaged sites are mostly in Lao Cai province, while the most advantaged are predominantly in Da Nang. Pupils in the more advantaged sites are notably more likely to use a computer outside school. Almost all children have access to a copy of the core maths and Vietnamese text books for 'their own use'. Five of the study sites have significant numbers of ethnic minority pupils, and these sites are the most disadvantaged in terms of children's home backgrounds. Pupil absence from school is low across all sites and family size is typically small. Among the sampled students, 6% were identified as 'over-age' for their grade.

Figure 1. *Children's home background and learning materials, by site*



School, class and teacher quality indicators

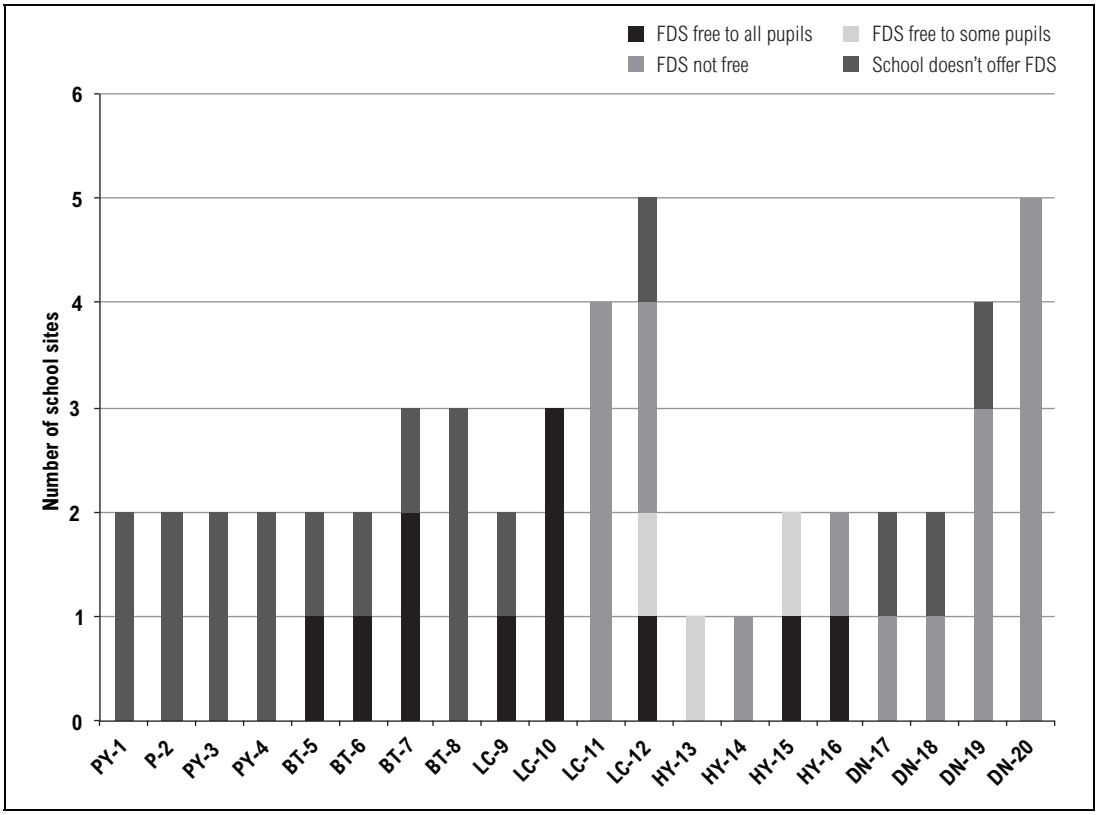
In all of the study sites, the majority of schools have working toilets and electricity. In the most disadvantaged sites, schools usually have a larger number of satellite sites, a higher percentage of ethnic minority pupils, and a smaller number of pupils enrolled in total. Children in poorer sites are less likely to be in schools that have libraries, computers or the internet. Pupils in poorer areas are also typically in classes with lower levels of facilities or assets and receive fewer periods of instruction, but are in smaller classes. Levels of class assets in schools increase fairly consistently as the level of children's home background advantage in the site increases. Teachers' reports of pupils' attainment show a similar pattern to the Young Lives test results, indicating that teachers have good knowledge of their pupils' levels of attainment and progress.

Instructional hours

Instructional time has been identified by MOET as a key area of policy intervention, with the aim of moving toward full-day schooling (FDS), with 30 and then 35 instructional periods per week by 2020 and 2025 respectively. Vietnam has some of the lowest formal instructional hours in Asia, and the 2007 MOET and World Bank reading and mathematics assessments identify a positive relationship between schools in which a larger proportion of children received full-day schooling and pupils' maths and Vietnamese scores (although there remains some debate as to the relative effectiveness of FDS in boosting performance as against other investments).

The school survey collected a range of data on instructional hours, at the school, class and child levels. At the school level, 51% of head-teachers report that their school offers FDS to all pupils and a further 11% report offering it to some pupils. The data are illustrated in Figure 2. Among the schools whose head-teachers state that they offer FDS to all pupils, the overwhelming majority (75%) report offering it every day of the week. Just under half offer it at a cost to parents, and around 40% offer it free to all pupils. The pattern of whether or not fees were levied varied across sites – where FDS was provided, head-teachers in Ben Tre and Phu Yen state that it is offered free of charge, while head-teachers in Da Nang report levying charges.

Figure 2. *Number of school groups offering full-day schooling free of charge, by site*



There is considerable variation in the numbers of periods of instruction provided between sites in the school survey. In Phu Yen, head-teachers report that FDS is not offered, and consistent with this, the number of periods of instruction per week provided in the sample classes is always less than 30. In two sites in Ben Tre, where head-teachers in all schools report that FDS is offered, a great deal of variation existed in the number of instructional periods between classes. In Lao Cai, although head-teachers state overwhelmingly that FDS is available, the number of instructional periods is most commonly 25 or fewer. In Da Nang, while there is variation both within and between sites in head-teachers' reports of whether FDS is offered, it is evident from class-level data that the majority of classes receive 35 or more periods of tuition per week in all but one site. This data highlights the need to understand in greater detail how the provision of FDS is interpreted at school level and how policy is being implemented.

Achievement and learning in mathematics and Vietnamese

At the beginning of the school year, pupil achievement levels in maths and Vietnamese reading were highest in Da Nang and lowest in Lao Cai. In terms of learning progress on the Grade 5 curriculum during the school year, however, larger than average gains were observed in the four least-advantaged sites in both maths and Vietnamese reading. This is one of the most positive findings of our research, suggesting that schools are successful in helping disadvantaged children to 'catch-up'. Similarly, while pupils from the Kinh majority ethnic group show higher levels of learning achievement than ethnic minorities at both the beginning and at the end of the year, the gap is found to be narrowing over the school year. Although linked to the lower starting points of non-Kinh children, these findings do indicate that curricular mastery among ethnic minorities improves notably during Grade 5.

Learning progress in Grade 5 and pupils' backgrounds

Table 1 summarises the results of achievement tests in maths and Vietnamese reading by gender and ethnic background, illustrated graphically in Figure 3. Girls perform better than boys in Vietnamese reading at both the beginning and end of the school year, with the gap remaining very similar at both points in time, indicating no change in the relative advantage of girls in reading.

Children born earlier in the calendar year perform better in both subjects at both stages of testing. In both the first and second tests, access to learning materials such as books and computers is typically associated with better results. Better nutrition in the form of more meals per day is also associated with better test scores. For maths, children who spend more time on homework make slightly more progress, as do older children and boys. In Vietnamese, children who read books outside school and who have their own place to study make better progress. Having repeated a grade is consistently related to lower scores, including when controlling for prior scores.

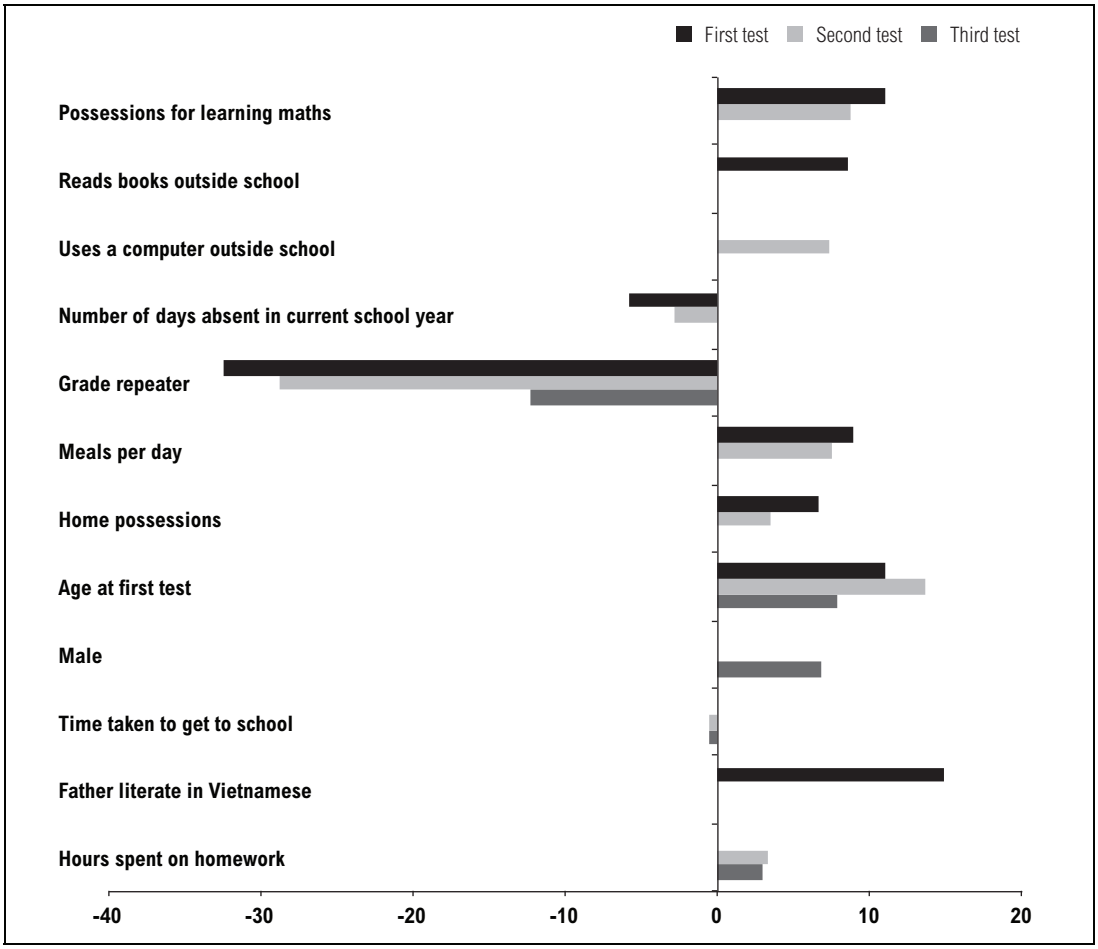
The effect of ethnic minority status when controlling for other background factors is found to be negative at the beginning of the year, but at the second test and in terms of progress, differences are not significant, indicating some reduction in the gap in terms of curricular mastery between minority pupils and Kinh, net of the effects of other background characteristics. This suggests that the origin of the gap between ethnic groups lies primarily in earlier experience, since there is no evidence of worsening inequality in Grade 5. This is positive indicator of the effectiveness of schools, suggesting that schools are not more effective for more advantaged pupils.

Table 1. *Summary of test results and progress over the school year*

		Maths			Vietnamese		
		October 2011	April 2012	Gain	October 2011	April 2012	Gain
Average		500	540.06	40.06***	500	513.93	13.93***
Gender	**Girl**	503.05	540.69	37.64	514.57	528.16	13.59
	Boy	497.33	539.38	42.05	487.54	500.95	13.41
	Difference	5.72**	1.31	4.41*	27.03***	27.21***	0.18
Ethnicity	**Kinh**	509.59	546.05	36.46	511.65	518.29	6.64
	Ethnic Minority	434.01	497.91	63.90	420.16	483.30	63.14
	Difference	75.58***	48.14***	27.44***	91.49***	34.99***	56.50***

*** t-test of the difference in means significant at the 1% level

Figure 3. *Background characteristics, test scores and progress*



Results shown are statistically significant (p<0.05 or higher). See Table 14 for more on pupils' background characteristics, test scores and learning progress.

Learning progress and school, class and teacher factors

School-level analysis suggests that pupils in the most disadvantaged group by home background attend schools with only slightly lower than average overall student progress (suggesting schools catering to disadvantaged pupils are 'adding value'). The evidence that more disadvantaged pupils are 'sorted into' lower quality schools in terms of 'value-added' is weak, although advantaged pupils do typically attend schools with somewhat better resources. Nonetheless, substantial differences in school effectiveness are found between schools in the sample. The highest-performing schools in value-added terms are found to have better facilities than the lowest-performers, including being more likely to have separate classrooms, working electricity, and a higher proportion of teachers who were qualified to degree level. In addition, the head-teachers of these schools were less likely to originate from the province where the school was located and the school was less likely to admit all pupils who apply. The figures are presented in Table 2.

While disadvantaged pupils are found to attend slightly lower quality schools, some of the highest performing schools in terms of value-added serve relatively disadvantaged school populations. In terms of the class-level factors associated with higher levels of 'value-added', these include higher levels of class assets and facilities, fewer children who arrive late each day, children who eat more meals per day, those who have higher levels of home-possessions, and teachers with permanent rather than temporary contracts. Figures are reported in Table 3. Teachers were asked to respond to attitude questions relating to 'teacher efficacy' and teachers in high performing classes tended to demonstrate a higher sense of their own ability to improve children's learning. In poor-performing classes there were typically more grade repeaters and more boys. There is little relationship overall between class-level disadvantage and the total value-added at school and class-level combined, indicating that on balance the relationship between school quality and pupil backgrounds in the sample is weak.

Table 2. *Differences between schools that add high and low value to pupil learning*

	High value-added schools	Low value-added schools	Sig.
School Facilities Index (average of school sites)	0.55	0.34	
Each Grade 5 class has a separate room (%)	100	80	*
Working electricity available (average of school sites) (%)	100	79	*
Head-teacher originates from the province (%)	33	80	**
All children who apply gain admission (%)	78	100	*
Teachers with degrees (%)	83	63	*
Average maths score (First test)	502.52	486.72	
Average maths score (Second test)	571.85	500.67	***
Average Vietnamese score (First test)	497.64	490.18	
Average Vietnamese score (Second test)	554.33	481.41	***
Average Pupil Background Index	-0.43	-0.50	
Ethnic minorities (% of pupils)	31	17	

t-test significance:*** p<0.01, ** p<0.05, * p<0.1. Schools were defined as high/low value added when they were in the top/bottom of schools, ranked by value added in both maths and Vietnamese

Table 3. *Differences between classes that add high and low value to pupil learning*

	High value-added classes	Low value-added classes	Sig.
Class characteristics			
Class Assets Index	0.16	-0.21	*
Adequate electric lighting (%)	100	93	*
Fan (%)	97	79	**
Overhead projector (%)	12	0	**
Storage cabinet (%)	91	76	**
Teacher characteristics			
Temporary contract (%)	0	7	*
Teacher originates from the province (%)	62	83	**
Number of evaluations of the teacher last year	8.38	6.17	*
Teacher does additional work outside school (%)	6	17	*
Number of homework tasks set per week in maths	2.53	4.31	**
Number of homework tasks set per week in Vietnamese	3.82	6.17	**
Pupil characteristics (Class average)			
Boys (%)	50	54	*
Average of Home Possessions Index	0.12	-0.21	*
Average of Background Index	-0.02	-0.25	
Ethnic Minority pupils (%)	17	10	
Average hours of extra classes in 'other subjects' attended	0.65	0.28	**
Grade repeaters (%)	3	7	***
Average number of meals eaten per day	2.89	2.82	*
Teacher reports about pupils (Class average)			
Vietnamese score (0-10 scale)	8.22	7.75	**
maths score (0-10 scale)	8.39	7.68	***
Academic ability (1-5 scale)	3.64	3.49	**
Problem of lateness (a major or minor problem)	0.26	0.45	**
Problem of lack of materials among pupils (major or minor problem)	0.24	0.48	**
Teacher attitudes (1=strongly agree 2=agree 3=disagree 4=strongly disagree)			
The amount a student can learn is primarily related to family backgrounds	3.08	2.82	**
I have not been trained to deal with many of the learning problems my students have	3.00	2.79	*
I am very limited in what I can achieve because a student's home environment is a large influence on his/her achievement	1.97	2.17	*
The influence of a student's home experience can be overcome by good teaching	2.03	2.28	*
Even a teacher with good teaching abilities may not reach many students	2.94	2.69	*
Pupil test scores (Class average)			
Average maths score (First test)	520.17	503.40	
Average maths score (Second test)	612.03	496.13	***
Average Vietnamese score (First test)	522.10	500.96	*
Average Vietnamese score (Second test)	588.05	466.91	***

t-test significance:*** p<0.01, ** p<0.05, * p<0.1. Classes were defined as high/low value added when they were in the top/bottom of classes, ranked by value added in both maths and Vietnamese

Learning progress, academic self-concept and academic stress

Gender and ethnic group differences are found in children's academic self-concept, with girls demonstrating higher academic confidence and academic effort scores than boys. Higher academic confidence and academic effort scores are associated with higher cognitive achievement in maths and Vietnamese; a positive relationship being found at both the beginning and end of the school year. With regard to academic confidence, there is a significant relationship with the end of year test-score in maths and Vietnamese reading when controlling for prior scores and background factors, indicating that academic confidence may promote academic progress.

Key Findings

- Gaps between groups of children are well established by Grade 5. Student scores at the beginning of the school year are strongly predictive of later scores, linked also to their household backgrounds. This draws attention to the importance of focusing on children's learning in the early years, to improve learning overall.
- There is evidence of differential progress made during Grade 5. More advantaged pupils tend to make slightly more progress, but there is also encouraging evidence of 'catch-up' by minority ethnic groups in relation to the Grade 5 curriculum expectations.
- Some schools and classes make a bigger contribution than others to how children learn. These effects can be large, and greater than the differences in the gains made between social groups.
- Key factors that emerge as important to consider at the school and class level include better facilities (including separate classrooms and working electricity), teachers who have a degree, and teachers who feel equipped to positively affect the learning of their students.

1. Introduction

Achieving universal access to good-quality basic education, the second of the Millennium Development Goals, is a key concern in countries such as Vietnam, which had achieved near-universal enrolment by the end of the twentieth century, and where improvements in quality have been made more attainable by robust economic growth and a falling birth rate and school-age population. As well as being a widely accepted human right, good-quality basic education lays the foundations for more advanced learning and is linked to improved livelihoods and to poverty reduction through improved cognitive skills and labour productivity. Widening opportunity resulting from improved access to high-quality schooling may also be expected to play a role in reducing economic and social inequalities. Moreover, skills development is a high priority in Vietnam, where future economic development is linked to the potential to 'move up the value chain' and to avoid a 'middle-income trap' in the longer term.

Nonetheless, school-based inputs are only one set of influences on a child's learning development, and – even in an equitable education system – countervailing background and contextual influences may perpetuate or widen differences in learning progress between more and less advantaged pupils, with important consequences for equality of opportunity and for social mobility. A number of education policies in Vietnam in recent years have sought to improve educational opportunities for pupils in less advantaged areas specifically, with the intention of reducing 'learning gaps' which arise as a result of differences in both home- and school-level disadvantage. The Ministry of Education and Training (MOET), in collaboration with the World Bank, conducted extensive assessment studies in reading and mathematics with primary Grade 5 children in 2001, 2007 and 2011, providing comprehensive and nationally representative data on levels of achievement in Vietnamese primary schools. Since these studies use cross-sectional data, however, they are less well suited to examining children's learning trajectories, or to assessing the contribution of schools and teachers to children's learning progress and development over time. This report provides new evidence from Young Lives, a longitudinal study focused on children's learning progress and on school and teacher effectiveness. While the data are limited to five selected provinces, the focus on 'value-added' adds to existing cross-sectional studies by examining how what children learn in mathematics and Vietnamese reading during primary Grade 5 is linked to their schooling and home backgrounds, and how these factors influence the evolution of 'learning gaps'.

2. Background

Enrolment rates for basic education in Vietnam compare favourably with many countries of similar and sometimes higher income levels (World Bank 2011:10). While no international standardised test data are yet available in Vietnam, PISA tests (the Programme for International Student Assessment) were conducted in 2012 and results will be available in 2013, indicative estimates of learning levels in the country are also typically high by comparison with other countries of a similar (or in some cases higher) income level. The World Bank (2011), for example, makes indicative comparisons of standards in reading and mathematics in Grade 5 with those of Grade 4 or 5 pupils in several high-income countries,

including Hong Kong, Ireland, the Czech Republic, New Zealand and the Netherlands, although data do not allow robust comparisons. Young Lives data show levels of achievement and of learning progress in mathematics to be higher on average in the Vietnam sample at all ages than in the other countries included in the study (Ethiopia, India (Andhra Pradesh) and Peru) (see Rolleston et al. 2013).

Primary schooling in Vietnam is compulsory, and basic 'half-day' provision is free of charge, while fees are levied in some cases for full-day schooling, and many families also pay for other forms of supplementary education. Charges are also often levied for a variety of sundry non-tuition expenses. The principle of 'socialisation' in education and other social services encourages the sharing of costs and responsibilities for provision between authorities and communities, with additional support being provided to those districts least able to share costs, so that in the case of 'full-day' schooling, for example, pupils in many of the most disadvantaged areas receive the second half of a day's tuition free of charge.

Children normally start school in the calendar year in which they become 6 and progress through five primary grades, studying six subjects in addition to maths and Vietnamese. Overall, Vietnamese children receive a relatively low number of hours of instruction by international standards, and many continue to attend only morning classes. Around 43 per cent of pupils attended full-day schooling in 2003–04, a figure which rose to 59 per cent in 2008–09, while the extension of full-day schooling to the remainder is set to be achieved by 2020 (World Bank 2011). Some schools, especially in more remote areas, consist of a main site with one or more satellites: classrooms or blocks of classrooms at a distance from the main site, intended to make schooling accessible in rural areas, while sometimes lacking the full facilities of a main-site school. A small number of children are taught in 'multi-grade' classes, also most often in remote areas.

Vietnam has experienced substantial economic growth and poverty reduction in recent years and spends a relatively high proportion of GDP and of public expenditure on education (5.3 per cent of GDP in 2008, or 19.8 per cent of expenditure, World Bank 2013). Policies to improve education quality more generally are linked to broader objectives to develop the country's human capital, productivity and competitiveness in increasingly globalised markets and for an increasingly knowledge-oriented economy. Reforms in the period following the achievement of near-universal access to primary and lower-secondary school have focused on improving education quality for all, including through a number of government- and donor-supported programmes targeted specifically at disadvantaged areas, most notably PEDC (Primary Education in Disadvantaged Communities) and SEQAP (School Education Quality Assurance Programme). In addition to quality improvement in general terms, these policies have focused on ensuring minimum standards of educational inputs across the country (monitored through the FSQL (Fundamental School Quality Levels) data system) in order to reduce inequalities in education quality and to improve equality of 'opportunities to learn' and equity of outcomes.

3. Young Lives surveys

3.1 The Young Lives household survey

Young Lives is a longitudinal study of childhood poverty in Ethiopia, India, Peru and Vietnam, following a total of 12,000 children over the course of 15 years in two age cohorts: a 'Younger Cohort' born in 1994–95 and an 'Older Cohort' born in 2001–02. In Vietnam, as in the other study countries, a sentinel-site sampling design is employed, comprising twenty purposely selected sites chosen to represent diversity, but with a pro-poor bias. A short description of each site is included in Appendix C. At the site level, children in both birth cohorts were selected randomly in 2001, so that the data are representative of the birth cohort in each site. The sites in Vietnam are clustered within five provinces (see Figure 4): Ben Tre, Da Nang, Hung Yen, Lao Cai and Phu Yen. Each province contains four sites, and each site is formed of one or two communes, totalling 36 communes in all. Data have been collected from the households of the index children since 2002, while school-level data collection began in 2011, at the schools of the younger cohort of children (aged around 10 in 2011) for the sub-sample enrolled in primary Grade 5.

Figure 4. *Young Lives study sites in Vietnam*

For children in both the Younger and Older Cohorts, enrolment in school at the primary level is near universal. Enrolment declines as children reach the end of the compulsory cycle of schooling, particularly for those from disadvantaged backgrounds and rural areas, as shown in Table 4, which disaggregates enrolment data by sex, by urban/rural location and by quintile of household wealth (showing figures for the poorest and least poor quintiles).

Table 4. *Enrolment in school among index children, by background characteristics (%)*

Cohort / age	Total	Girls	Boys	WQ1	WQ4	Rural	Urban	WQ1 Girls	WQ1 Boys	WQ 4 Girls	WQ 4 Boys
YC age 5	0	1	00	00	1	1	0	1	1	1	1
YC age 8	96	96	96	94	94	96	96	95	93	93	94
OC age 8	99	98	99	94	100	98	100	92	95	100	100
OC age 12	96	96	95	90	96	95	98	89	90	98	94
OC age 15	73	78	69	58	87	71	83	66	50	92	83

YC = Younger Cohort (born 2001–02); OC = Older Cohort (born 1994–95).

The Wealth Index is calculated using a composite housing quality, durable goods and access to services. Wealth Quartile 1 comprises the poorest households, and Wealth Quartile 4 comprises better-off households.

3.2 The School Survey

All schools located within the Young Lives sentinel sites which were attended by one or more Younger Cohort index children in Primary Grade 5 in September 2011 were sampled in the school survey. In order to select a balanced sample of pupils at the class level suitable for school- and class-level analyses, the sample of index children was augmented by adding their class peers to a class-level total of 20 pupils, following a randomisation procedure. The final sample is formed of 3,284 Grade 5 pupils (of whom 1,138 are Young Lives children)[1] in 176 classes in 56 schools or 92 school sites (with satellite sites considered separately). Table 5 shows the distribution of pupils, classes and school sites by province. An average of 1.85 classes is surveyed in each sampled school site. The number of classes per school site is higher in more densely populated areas, where schools tend to be larger and where there are fewer satellites: in the coastal city of Da Nang, for example, compared with the more rural and mountainous province of Lao Cai.

Table 5. *The Vietnam school survey sample*

Province	School sites	Classes	Pupils	Classes/site	Pupils/site
Ben Tre	15	34	680	2.27	65.33
Da Nang	15	48	944	3.20	62.93
Hung Yen	7	21	443	3.00	63.29
Lao Cai	37	41	595	1.11	16.08
Phu Yen	18	32	622	1.78	34.56
Total	**92**	**176**	**3284**	**1.85**	**35.70**

1 The Young Lives Younger Cohort children included in the school survey constitute 57 per cent of the Younger Cohort sample as a whole. See Appendix B for a comparison between the school and household survey samples.

The survey instruments[2] included questionnaires for principals, class teachers and pupils, an observation of the school site and class facilities, plus pupil tests in mathematics and Vietnamese reading comprehension, along with teacher tests in 'pedagogical content knowledge' in the same subjects. Pupils completed a background questionnaire focusing on their homes, families and education-related resources and on their time-use, including time spent on homework and attendance at 'extra classes'. Pupils responded to Likert-scale attitude questionnaires designed to assess 'academic self-concept' (comprising 'academic effort' and 'academic confidence') and 'academic stress', while teachers responded to a set of attitude items assessing 'teaching efficacy'.

4. Assessment test design

Pupils were tested in mathematics and Vietnamese at the beginning and end of the academic year. Test instruments in both subjects employed a 30-item multiple-choice format and were developed in consultation with curriculum experts from the Vietnamese National Institute of Educational Sciences (VNIES) and in line with those employed in the MOET/World Bank Grade 5 Study to measure learning levels in relation to curricular expectations, covering key subject domains at a range of levels of cognitive demand. The first and second tests contained a number of common ('anchor' or 'link') items (15 in mathematics and 12 in Vietnamese) which permit the equating of the two tests on a common interval scale using analysis based on item-response theory (IRT),[3] in turn enabling longitudinal measurement of learning progress.

The initial (beginning-of-year) pupil tests were designed to measure learning levels at entry to Grade 5, so they included items to reflect the curriculum in previous grades, especially Grade 4; the end-of-year tests included items from the Grade 5 curriculum, more advanced Grade 4 items and 'link items' replicated from the initial test. Each test was administered in 45 minutes. Pilot exercises were employed for both sets of tests, to ensure balance in terms of test-item difficulty and discrimination, as well as curriculum coverage. Box 1 shows examples of test items used to assess achievement in key areas of the mathematics curriculum. The items shown are 'link' items which appeared in both tests. Box 2 contains an example of a reading passage and a simple example of a comprehension question translated from the initial Vietnamese reading-comprehension test.

2 The survey instruments, a data user guide and associated documents can be downloaded from http://www.younglives.org.uk/what-we-do/school survey/Vietnam-school survey.

3 Documentation explaining the development and validation of the test instruments can be downloaded from http://www.younglives.org.uk/what-we-do/school survey/Vietnam-school survey.

Box 1. *Examples from the maths test*

Curriculum area	Question
Number series	**9. Fill in the appropriate number:** **1, 3, ☐ , 27**
Units of measurement	**12. Fill in the correct number:** **9.000.000m^2 = ……..km^2**
Mixed equations	**23. Calculate:** **20 + 20 : 4 x 5 = ……**
Arithmetic problems	**30. Nhung sold 60 newspapers and Huong sold 80 newspapers, at the same price. The total amount of money they get from selling newspapers is 700 000 dong. How much money did Huong get from selling the newspapers?**

Box 2. *Example from the Vietnamese reading test*

EATING FISH MAKES YOU SMARTER

Hoang loves fish so much. Nam told him that eating fish would make him smarter. Is this true? Hearing the question, Hoang's mother nodded: 'Eating fish will make you smart'. Fish contains many proteins, minerals and vitamins needed for your body's development. Consuming a sufficient quantity of fish will help children to grow faster and stronger. Moreover, eating fish helps overall body and brain development. Of course, eating too much fish will cause indigestion; there are even some types of fish that are harmful and which we must not eat.

From Thai Quynh

Q: What does the story advise?

A. To eat all types of fish.

B. To eat as many fish as possible.

C. To eat a sufficient amount of fish, not harmful fish.

D. To eat only fish, not to eat any other kind of food.

Since the tests were designed to reflect curricular expectations at the beginning and end of Grade 5, they measure levels of learning in relation to a fixed 'target' of knowledge and skills, rather than being comprehensive measures of all learning in the selected domains. While this is appropriate for the purpose of understanding Grade 5 curriculum mastery (our primary purpose), more advanced pupils may be expected to have mastered some elements of later curricula which are not tested. Accordingly, the maths test, for example, measures performance in relation to the Grade 5 curriculum, not more generalised mathematical ability or knowledge. Further, since the tests employ a multiple-choice format, a proportion of

correct responses reflect lucky guesses.[4] Very low-performing pupils may be expected to have response patterns comprising a high number of guesses, thus reducing the reliability of IRT scores at the bottom of the distribution. A very small group of exceptionally high performers answered all questions correctly, or all except one, and for these pupils the reliability of IRT scores is also lower,[5] since the test could not distinguish precisely between their levels of curriculum mastery on the basis of the selected questions. Further, pupils scoring high marks in the initial test showed early mastery of the Grade 5 curriculum, and consequently it was relatively more difficult for them to make progress on these curriculum tests,[6] while they probably continued learning at a more advanced level. These features of test design are linked to patterns of progress identified as reported in Sections 8 and 9. Interpretation of 'progress scores' understood simply as the difference between beginning-of-year and end-of-year scores should therefore bear in mind that lower-starting pupils have more 'room to progress' in relation to a fixed competence target.

Table 6 reports the numbers of pupils who completed the initial and second tests in each subject. A comparable score on both tests is available for more than 97 per cent of the sample in both maths and Vietnamese. The results of the tests are discussed in Section 8.

Table 6. *Sample of pupils completing tests in mathematics and Vietnamese*

	Total Pupils	Completed initial test	Absent or zero	Completed second test	Absent or zero	Completed both tests	%
Maths	3284	3262	22	3205	79	3187	97.05
Vietnamese	3284	3272	12	3205	79	3194	97.32

5. Pupils' backgrounds and opportunities to learn

The gender and ethnic composition of the school survey sample is shown in Table 7. Around 12 per cent of pupils came from ethnic minority backgrounds, with the H'mong being the largest minority group. The sample is not representative of ethnic minority groups in Vietnam, but contains a broadly similar proportion of ethnic minorities as a whole (the national figure is around 13 per cent). For analysis, owing to the small sample size of groups other than the H'mong, ethnic minorities are treated as a single group. However, there are notable differences in test scores between pupils from different ethnic groups and also between those pupils in different sites, although sample size does not permit a full analysis of these.

4 The pseudo-guessing parameter in the IRT models employed allows for modelling of the extent to which 'guessing' affects the probability of a correct response to each test item, but IRT models are of course not able to distinguish 'lucky guesses' from correct answers in individual cases, while 'unlucky guesses' are identical to incorrect answers.

5 The 'standard error of measurement' estimated in IRT analysis is used to measure the reliability of the scores.

6 Although the test distributions do not show serious 'ceiling effects', and results are 'interval scaled', pupils with lower initial scores had greater opportunity to increase their scores, in the sense that they had achieved mastery of fewer areas of the curriculum at the first test and could therefore improve in relation to a wider range of curricular competencies (they had more 'opportunity to progress'). For the highest scorers, progress required mastery of a more specific range of content not previously mastered. Accordingly, a greater proportion of instructional time devoted to the Grade 5 curriculum could be expected to produce learning gains for initially lower-performing pupils.

Table 7. *Ethnic and gender composition of the school survey sample*

Ethnic group	N	%
Kinh	2875	87.81
H'mong	169	5.16
Cham	10	0.31
Ede	3	0.09
Ba Na	5	0.15
Nung	59	1.80
Tay	47	1.44
Dao	48	1.47
Giay	22	0.67
Other	36	1.10
Total*	**3274**	**100.00**

Gender	N	%
Female	1548	47.41
Male	1717	52.59
Total*	**3265**	**100.00**

* 10 pupils did not identify their ethnicity and 19 did not state their sex, hence the difference from the sample size of 3,284.

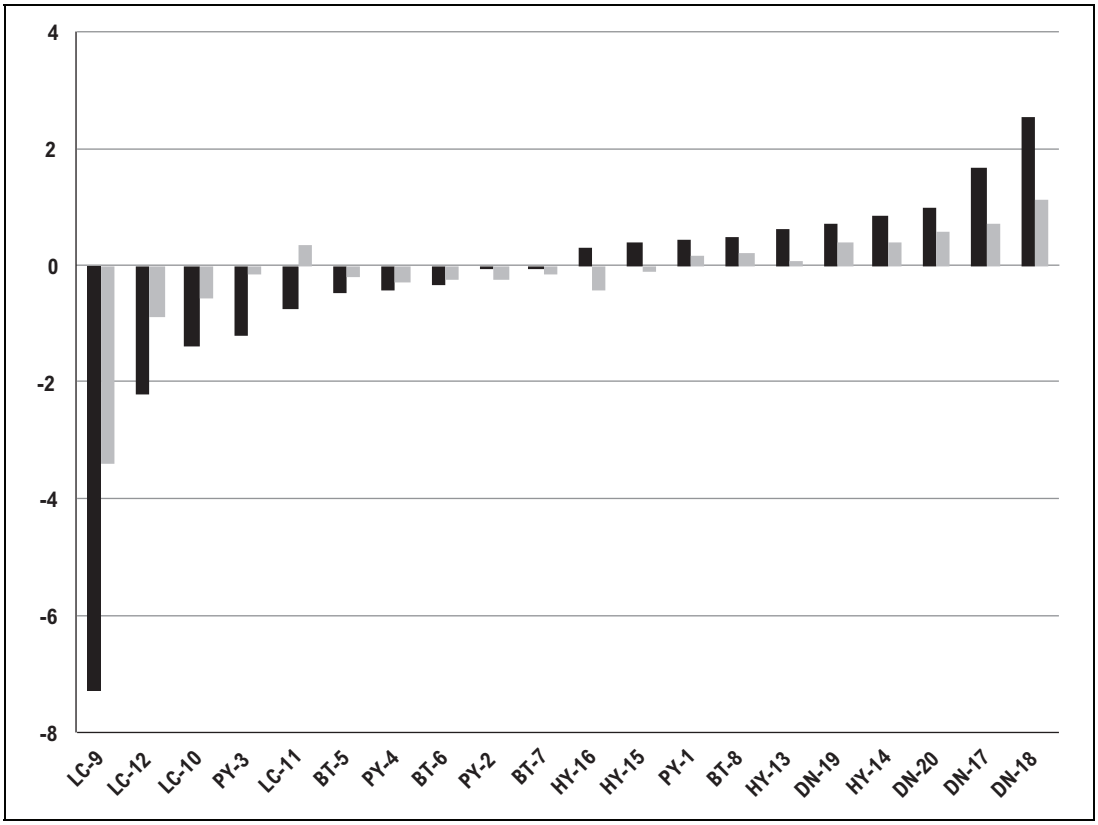
Among the 3,284 sampled Grade 5 students, 6.01 per cent were identified as 'over-age' for their grade, a very similar figure to the 5.94 per cent reported in the MOET/World Bank 2007 assessment (World Bank 2011), and 1.37 per cent of pupils were more than one year over-age. Reported school-attendance rates were found to be very high, with the average number of days missed by pupils between the beginning of the school year and the second test (a period of six to eight months) being less than one (0.94). The average number of days for which a school site was closed due to unforeseen circumstances was low, at 0.78. Reported teacher absence in the academic year preceding the survey was also low, at 1.87 days, with 95 per cent of teachers being absent for five days or less. Grade repetition was found to be relatively uncommon, with 4.28 per cent of all sampled pupils reporting that they had repeated a grade once or more than once.

Table A1 (in Appendix A) shows the mean characteristics of the sampled pupils in each of the 20 sentinel sites – the level at which the data are representative. The sites are ordered by mean level of 'home advantage', using a child home background composite score (centred on zero) computed using home assets, meals eaten per day, language spoken at home and parental literacy, among other indicators.[7] The least advantaged sites in terms of children's backgrounds are mostly in Lao Cai province, while the most advantaged are predominantly in Da Nang, with sites in the other provinces lying in between; those in Phu Yen are closer to Lao Cai, and those in Hung Yen closer to Da Nang. Five sites have significant numbers of ethnic minority pupils, all but one of which are in Lao Cai, and these sites are consistently the least advantaged in terms of home backgrounds. Pupil absence from school is low across all sites. Family size is typically small, with the exception of the least advantaged site, where pupils had on average 2.51 siblings, compared with the overall average of 1.08. The difference in home background disadvantage between the very most disadvantaged site (comprising 99 per cent ethnic minorities) and the other disadvantaged sites is especially large on a number of key indicators.

7 The home background score was computed using principal-components analysis of indicators of asset ownership (telephone, television, study desk, fan, computer, bicycle, study chair, air conditioning, internet access, radio, motorbike, study lamp, car) plus variables for own place to study, number of meals eaten per day, number of books in the household, Vietnamese spoken at home, ethnic minority status and parental literacy.

Pupils were asked if they had their 'own place to study' at home, which could include a 'private corner' – an indicator which the MOET/World Bank studies had found to be associated with learning achievement. While four-fifths of pupils did have their own place to study, the proportion was much lower in the Lao Cai sites. The proportion of children whose mothers had been to college varied from 1 per cent in the least advantaged site (rural Lao Cai) to 54 per cent in the most advantaged (urban Da Nang). There is, unsurprisingly, a strong relationship between pupils' background advantage and the learning materials that they possess. These are combined into an index (centred on zero) constructed from data about whether pupils have their own text books, writing materials, calculator and other learning resources.[8] Figure 5 shows the levels of home background disadvantage and learning-materials ownership, ordered by site-level home background (see Appendix C for details of each site).

Figure 5. *Mean home background and learning materials, by site*



In terms of other indicators of learning opportunity (summarised in Table A2 in Appendix A), pupils in the least advantaged sites typically reported receiving fewer homework tasks, especially in maths, but there is not a distinct pattern in terms of the teachers' checking of homework. Pupils in the more advantaged sites were notably more likely to use a computer outside school and on average attended a greater number of hours of 'extra classes' not part of the ordinary school day. Pupils were asked if they had a copy of the core maths and Vietnamese text books for 'their own use'. With regard to Vietnamese, 96 per cent reported that they did have a copy, and for maths the figure was 97 per cent. Neither figure was less

8 The learning-materials index was computed using principal-components analysis of materials-ownership indicators for calculator, cell phone, dictionary, school bag, ruler, and Vietnamese and mathematics text books.

than 90 per cent on average in any site. Pupils were also asked if they had additional books to use for learning in these subjects (not standard text books), as well as whether they had a Vietnamese dictionary, a calculator or a mobile phone (often used as a calculator). With the exception of the fairly large differences between the least advantaged site and the other sites, the pattern of access to these items is not especially strong. Selected variables of interest are presented in Figure 6, by site and ordered in terms of home background advantage as above. All variables are reported in Tables A1 and A2 in Appendix A.

Figure 6. *Selected learning indicators, by site*

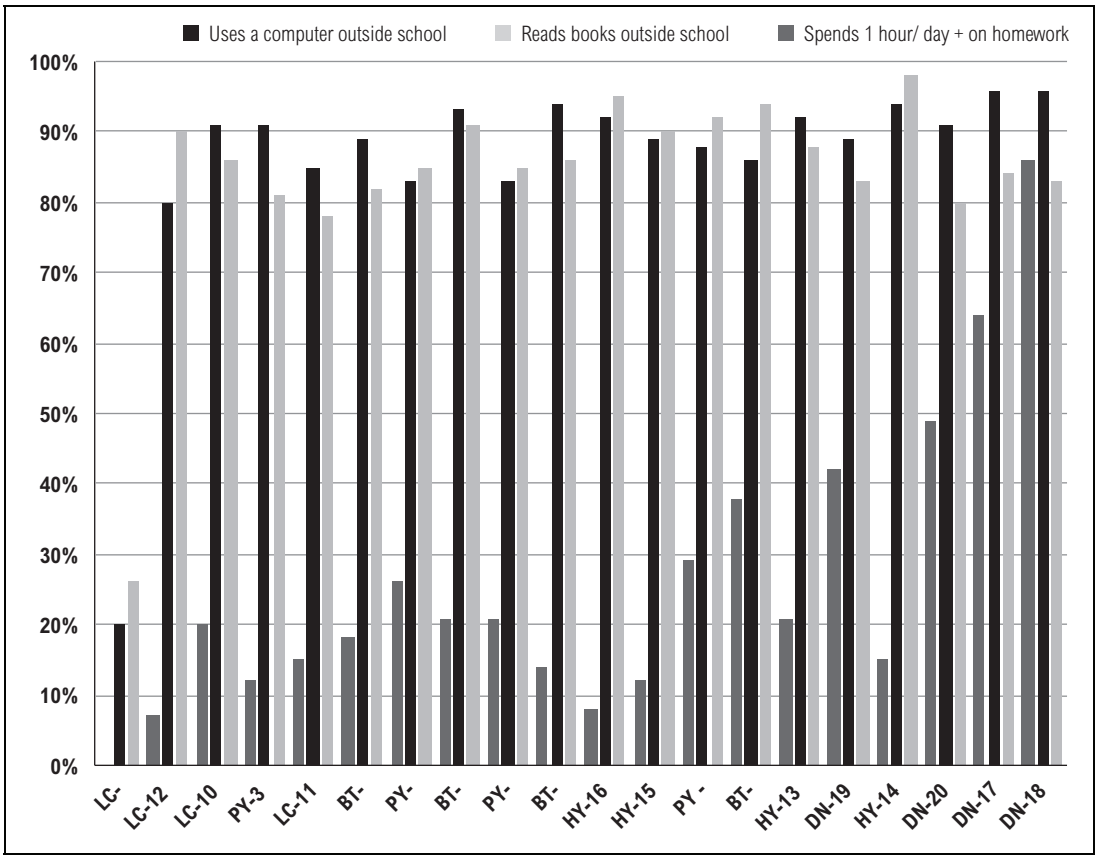
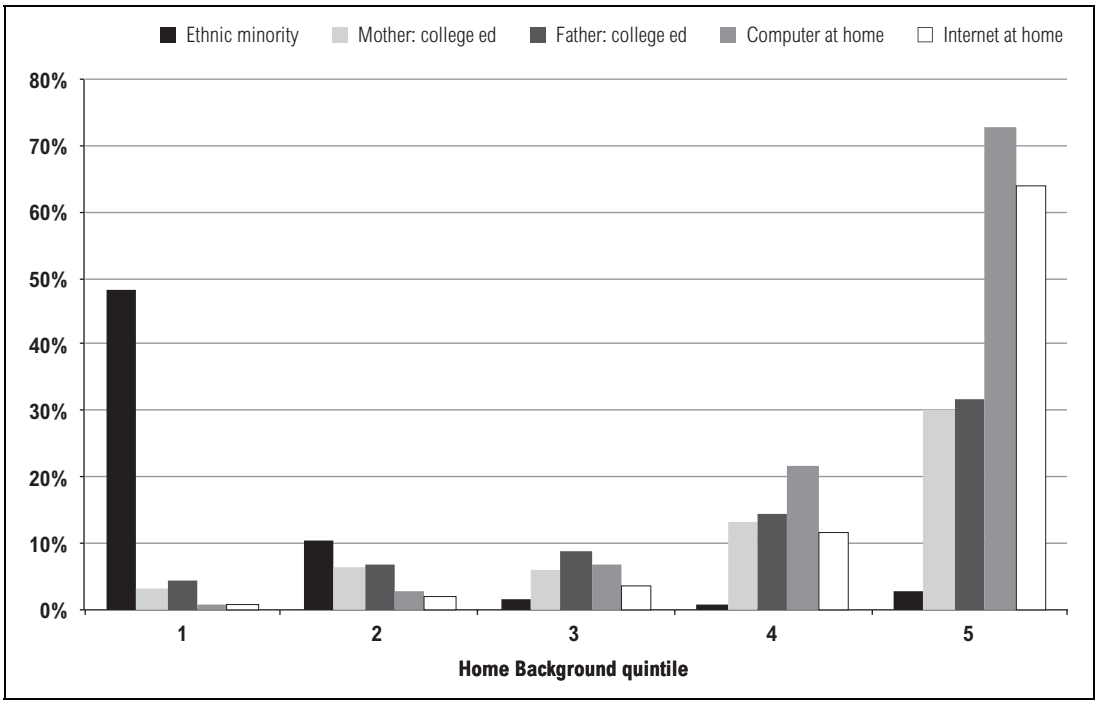


Figure 7 illustrates the distribution of key indicators of home background advantage, summarised by quintiles on the home background index (Quintile 5 being the most advantaged group), bearing in mind that some of the indicators are used to construct the index. It shows that ethnic minority pupils are overwhelmingly found in the lowest quintile of the composite index, while access to computers and the internet, as well as having parents who had been to college, are associated with the highest levels of advantage. More generally, the pattern is one which draws greater attention to differences between the highest and lowest groups in terms of advantage, with smaller differences being observed between the other three groups on these indicators.

Figure 7. *Indicators of advantage, by quintile of home background score*



6. Achievement and learning in mathematics and Vietnamese

Table 8 reports the mean scores and their standard deviations for the pupil tests in mathematics and Vietnamese reading comprehension administered at both the start and end of the school year.[9] It shows an increase of 40.06 points in maths and 13.93 points in Vietnamese, both of which are statistically significant average 'learning gains'. Figure 8 shows the distributions of scores. Neither distribution shows a 'ceiling' or 'floor' effect which, if present, would suggest that the test was unsuitable to measure ability across the range in the sample.

Table 8. *Means and standard deviations of maths and Vietnamese test scores*

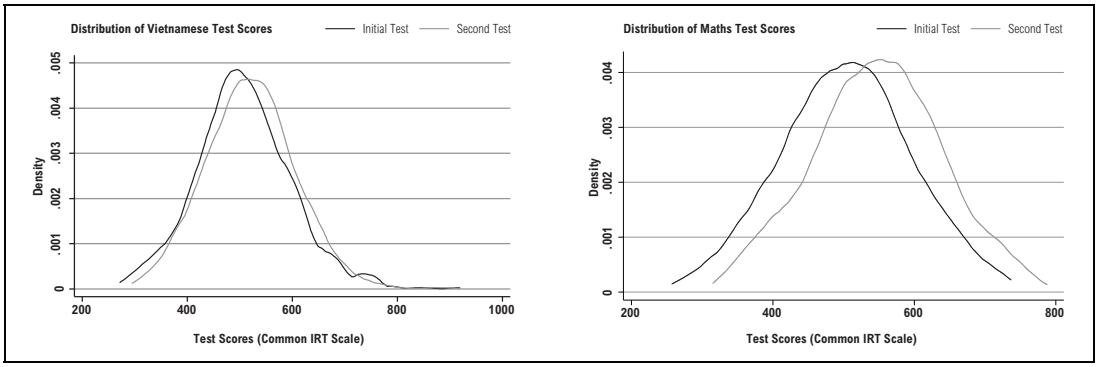
	First test		Second test		Difference
	Mean	Std Dev	Mean	Std Dev	
Maths	500	100	540.06	98.44	40.06***
Vietnamese	500	100	513.93	97.80	13.93***

*** t-test of the difference in means significant at the 1% level

9 Raw scores on both the initial and second pupil-achievement tests were transformed on to a common scale for each subject, using a three-parameter item-response theory (IRT) model to produce estimates of pupils' latent ability or performance trait (θ), taking account of item difficulty, discrimination by items between pupils and the possibility of 'guessing' answers correctly, given the multiple-choice format of the tests. The mean of the scale is set to 500 and the standard deviation to 100. Since the resulting scale is an interval scale, an equal increase at different points along the IRT scale between tests may be interpreted as an equal increase in the latent trait.

Table A3 in Appendix A shows the scores in both tests and the progress between tests at the site level. In maths and Vietnamese, achievement levels in both tests were highest in Da Nang and lowest in Lao Cai. In terms of the learning gain made between the two tests, larger than average gains are observed in the four least advantaged sites in both maths and Vietnamese. While larger than average gains may be expected for initially lower performing pupils, large gains were also made in some of the most advantaged sites, especially in maths, so that there is no strong pattern of learning progress at the site level by home background, in contrast to the stark pattern of initial test scores. In Vietnamese, patterns of progress by site were less discernible, except that in Lao Cai sites, where most of the children in the sample whose first language is not Vietnamese reside, progress was somewhat higher.

Figure 8. *Distributions of IRT-scaled test scores in maths and Vietnamese*



Levels of achievement in maths and Vietnamese were higher among girls in both the first and second tests, although the gap between them in maths narrowed (boys caught up) to be statistically insignificant by the second test, as shown in Table 9. The gap in achievement in Vietnamese between girls and boys is somewhat larger and was not reduced between the two tests. In fact the difference is almost twice as large as one year's average learning. The direction and magnitude of the difference between girls' and boys' performance is consistent with that found in the MOET/World Bank 2007 study (World Bank 2011).

Table 9. *Learning achievement and progress, by gender*

	Maths			Vietnamese		
	First test	Second test	Gain	First test	Second test	Gain
Girls	503.05	540.69	37.64	514.57	528.16	13.59
Boys	497.33	539.38	42.05	487.54	500.95	13.41
Difference	5.72**	1.31	4.41*	27.03***	27.21***	0.18

* t-test significant at 10% **at 5% *** at 1%

Pupils from the Kinh majority ethnic group showed higher levels of learning achievement than ethnic minorities in both tests, but the gap was found to be narrowing over time as greater progress in curriculum mastery was made on average by non-Kinh children, especially in Vietnamese. Although this is linked to the lower starting points of non-Kinh children, it nonetheless indicates that curriculum mastery among ethnic minorities improves notably

during Grade 5.[10] Test scores by ethnicity are shown in Table 10. In maths, the scores of ethnic minority pupils at the end of the year were not substantially lower than those of Kinh pupils six to eight months earlier, and the gap between minority pupils and Kinh in Vietnamese at the end of the school year was only slightly larger than the gender gap. While the sample of minorities is broadly representative of Grade 5 pupils in the selected sites, results are not more widely generalisable in relation to the differences between Kinh and ethnic minorities.

Table 10. *Learning achievement and progress, by ethnicity*

	Maths			Vietnamese		
	First test	Second test	Gain	First test	Second test	Gain
Kinh	509.59	546.05	36.46	511.65	518.29	6.64
Ethnic minority	434.01	497.91	63.90	420.16	483.30	63.14
Difference	75.58***	48.14***	27.44***	91.49***	34.99***	56.50***

* t-test significant at 10% *** at 1%. Results are for pupils with scores for both tests.

Pupils with more highly educated mothers showed higher achievement in maths and Vietnamese in both tests. In maths, pupils with different levels of mother's education had similar rates of progress, while in Vietnamese those whose mothers had never attended school and those who did not speak Vietnamese at home made more rapid progress than other groups. While the differences in progress are related to differences in initial scores and the 'opportunity to progress', it is nonetheless encouraging that disadvantaged pupils are found to make relatively good progress, albeit from a lower base, in terms of curriculum mastery (see Table A3 in Appendix A).

The way in which the gaps between groups in terms of curriculum mastery narrow over the course of Grade 5 is illustrated in Figures 9 and 10 in more detail, using specific examples from the assessment tests. Simple percentages of children able to answer individual items correctly in the most and least advantaged sites at the start and end of Grade 5 are reported. Figure 9 shows the percentages of children who correctly answer a Grade 4 item. While children in the advantaged Da Nang site have less progress to make (since 70 per cent answered correctly in the first test), children in the disadvantaged site make strong progress, narrowing the gap by more than 20 percentage points on the core arithmetic skill being measured. The tests also included more 'lateral thinking' maths items, presented in unfamiliar ways, intended to measure less 'algorithmic' understanding of appropriate curricular concepts – in this case understanding of fractions. Figure 10 shows the results for this example item, where progress is much greater in the advantaged site, perhaps due to those pupils' earlier mastery of more basic mathematical concepts, but nonetheless showing 'appropriate progress', taking account of prior learning.

10 In addition to the differences in starting points at the beginning of Grade 5, it is possible that learning opportunities are greater for more advantaged pupils during the summer holidays, and that accordingly they retain more of what had been learned in previous grades (or indeed make progress in relation to the curriculum) at the beginning of Grade 5, with the implication that part of the initial gap is a result of differences in 'summer learning'.

Figure 9. *Responses to the Grade 4 item '(20+20) / (4x5)'*

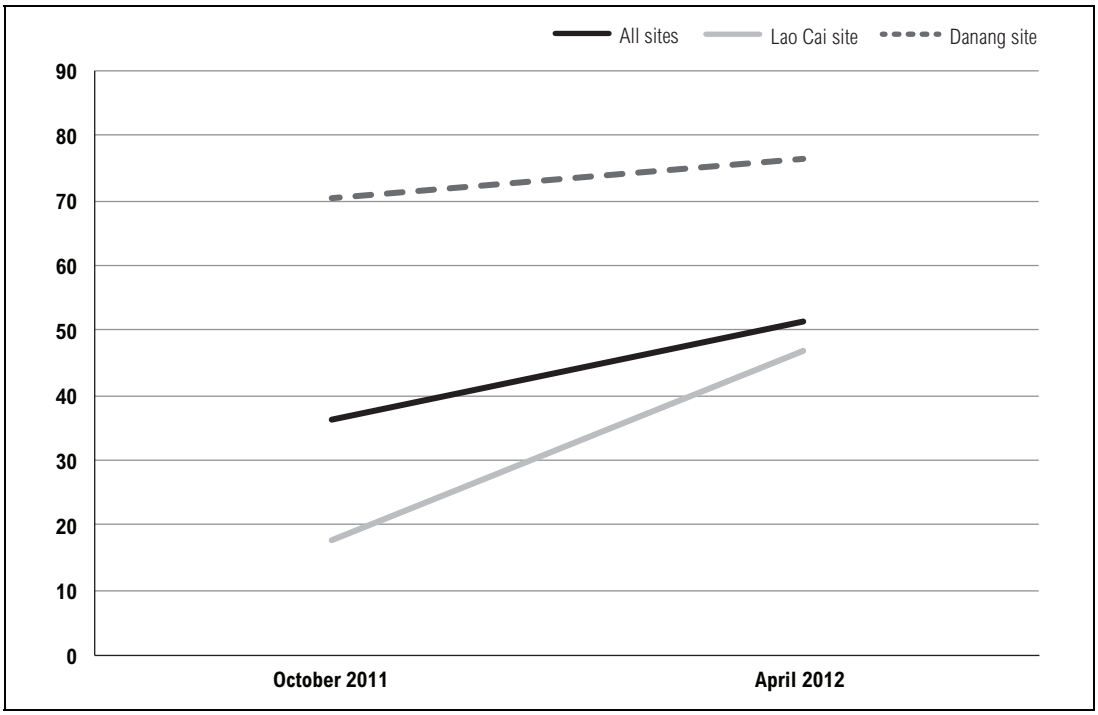
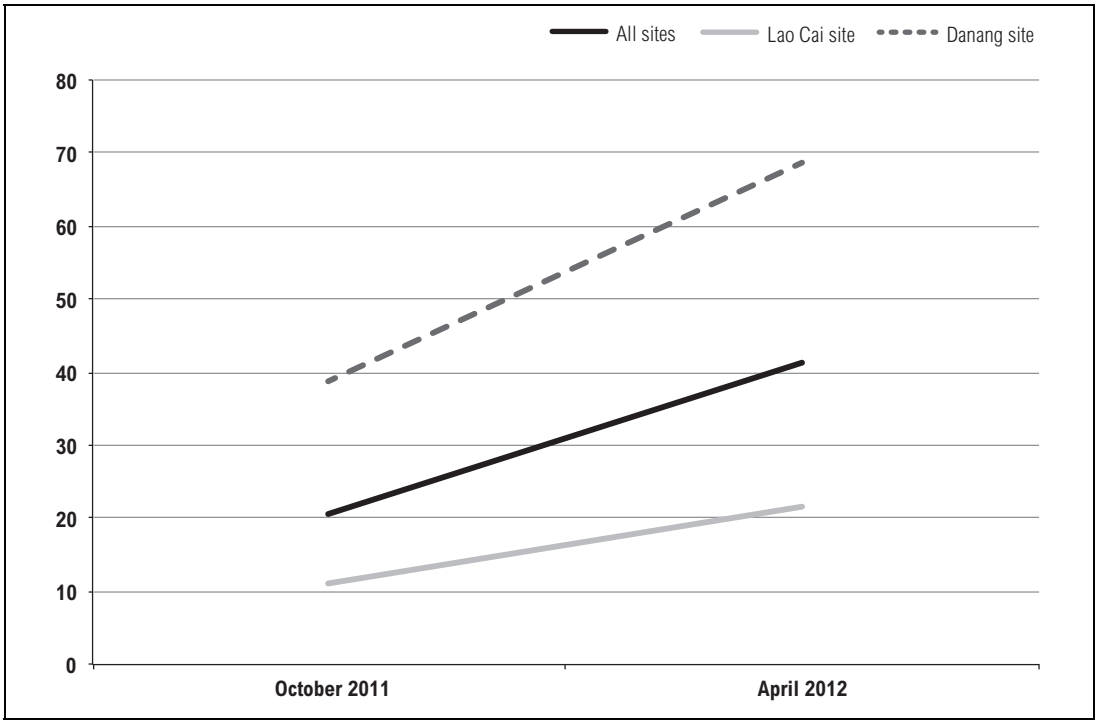


Figure 10. *Responses to an unfamiliar maths item on 'Understanding fractions'*



7. School-site, class and teacher-quality indicators

7.1 Schools and school sites

The Young Lives school survey included 52 'school groups', where a 'group' comprises a main school and its satellites (for satellites which are located within the geographic boundaries of the sample sites). The school survey included 38 satellites. Satellites are found in all sites, except sites in Hung Yen province and in two sites in Da Nang. Observations of school facilities were conducted for each school site, whether a main school or satellite. Table 11 reports indicators at the school-site level, ordered by the mean level of home advantage among pupils. In all sites, a majority of school sites, and often all, had working toilets and electricity. In sites in Da Nang, almost all school sites had a library, computers and an internet connection, while in most other sites few school sites had computers or access to the internet. In the most disadvantaged sites, typically fewer school sites had libraries, and schools usually had a larger number of satellites, a higher percentage of ethnic minority students and a smaller number of pupils enrolled in total. The largest schools tended to be in the most advantaged urban sites in Da Nang, while the smallest schools are in the least advantaged sites in Lao Cai.

Table 11. *School-site indicators, by sentinel site*

		Percentage of schools with				Average number of pupils at school	Average ethnic minority pupils at school %	Average number of satellites per school
		Library	Computers	Internet	Working electricity			
1	Phu Yen	57	0	0	100	426	0	1.0
2	Phu Yen	57	0	0	100	529	0	2.0
3	Phu Yen	63	0	0	93	549	56	2.7
4	Phu Yen	71	0	0	100	509	0	1.0
5	Ben Tre	67	83	83	100	526	0	1.7
6	Ben Tre	100	100	0	100	560	0	1.0
7	Ben Tre	75	0	0	50	634	0	1.4
8	Ben Tre	92	92	90	100	675	0	0.3
9	Lao Cai	39	0	0	65	306	99	4.7
10	Lao Cai	91	51	51	95	264	65	2.3
11	Lao Cai	44	9	9	88	261	28	2.2
12	Lao Cai	53	0	0	99	310	68	4.3
13	Hung Yen	100	0	0	100	894	0	0.0
14	Hung Yen	100	0	0	100	498	0	0.0
15	Hung Yen	100	0	0	100	404	0	1.0
16	Hung Yen	100	0	0	100	372	0.3	0.0
17	Da Nang	100	100	100	100	1099	0	0.0
18	Da Nang	100	100	100	100	2456	0	0.0
19	Da Nang	100	98	98	77	553	0	0.5
20	Da Nang	93	93	93	100	950	0	0.3
Total		**82**	**46**	**42**	**94**	**689**	**29**	**1.2**

In comparison with Table A1 in Appendix A, the pattern that emerges overall is that sites with low levels of home background advantage are typically served by school sites and classrooms with somewhat lower levels of school resources, especially where, for example, computer and internet technology are concerned.

7.2 Classes and teachers

Table 12 presents key indicators of school quality at the class/teacher level by sentinel site, ordered as before. Class-level assets are reported as an index score. This index is computed from data on the available classroom resources, including furniture, text books and computers.[11] Levels of class assets increase fairly consistently with the average level of child-background advantage in the site. Other differences between sites are slightly less consistent, although differences are evident between the most and least advantaged sites. Class size is typically small in the most disadvantaged sites, which are often remote areas; it is larger, sometimes to the point of over-crowding (as reported by teachers), in the more advantaged urban areas. Pupils in the most advantaged sites are usually taught for more periods per week than those in the least advantaged sites, and their teachers typically achieved slightly higher scores on the teacher maths and Vietnamese tests, as well as being more likely to have a university degree. The need for major repairs to the classroom was reported more often in disadvantaged sites. However, relatively low levels of quality indicators are observed in some sites with intermediate levels on the pupil-background score; and moreover differences between sites in terms of many key quality indicators are often small, and the pattern by level of site advantage is often not consistent, except when comparing extremes.

Table 12. *Class-level quality indicators, by sentinel site*

Site	Province	Class size (average)	Periods of instruction per week	Class assets	Teacher has university degree	Class over-crowding
9	Lao Cai	13.57	25.86	-3.40	0.14	0.14
12	Lao Cai	14.29	25.93	-1.29	0.43	0.07
10	Lao Cai	15.60	26.44	-0.20	0.20	0.00
3	Phu Yen	23.43	25.00	-0.25	0.57	0.00
11	Lao Cai	17.40	23.90	-0.47	0.50	0.00
5	Ben Tre	30.83	32.50	-0.20	0.50	0.17
4	Phu Yen	25.33	24.78	-0.35	0.11	0.00
6	Ben Tre	31.00	29.57	0.45	0.14	0.14
2	Phu Yen	23.33	25.00	-0.65	0.22	0.33
7	Ben Tre	30.25	29.50	0.19	0.13	0.13
16	Hung Yen	28.75	32.00	1.07	0.00	0.00
15	Hung Yen	24.83	32.80	0.64	0.50	0.00
1	Phu Yen	27.43	24.71	0.10	0.29	0.57
8	Ben Tre	29.77	25.62	0.29	0.54	0.08
13	Hung Yen	32.33	30.33	0.28	0.33	0.17
19	Da Nang	29.14	33.64	0.20	0.86	0.29
14	Hung Yen	33.67	40.00	0.24	0.67	0.00
20	Da Nang	38.93	34.20	0.66	0.47	0.33
17	Da Nang	41.44	32.33	1.83	0.67	0.78
18	Da Nang	42.60	27.10	1.03	0.80	0.90
Total		**27.59**	**28.65**	**0.00**	**0.43**	**0.23**

11 The class-assets index was computed using principal-components analysis of indicators for materials and facilities available, comprising lighting, fan, reading books, chalk board, cabinets, wall map, teacher's desk, television, radio, computer and overhead projector.

Teachers were asked to report their own assessments of pupils' attainment in maths and Vietnamese. Their reports show a similar pattern to the Young Lives test results in both subjects. Table 13 shows the average test scores in maths for each level, reported by teachers on a zero-to-10 scale. The strong relationship between the scores and reports indicates that teachers knew their pupils' levels of attainment well. Teachers were also asked to report ratings of pupils' academic ability, motivation, participation in class and level of home support (reported by site in Table A3 in Appendix A).Teachers appear to have distinguished between 'ability' and performance to the extent that there is not a strong relationship between teachers' assessments of performance and their estimation of pupils' abilities. Differences are more clearly discernible between the most and least advantaged sites, but not elsewhere: teachers in all except one Da Nang site rated their pupils more highly than average on all these measures, while teachers in Lao Cai and Phu Yen sites more often rated them lower.

Table 13. *Average test scores, by teacher ratings of pupil performance in maths*

Teacher rating	Mean test score (first test)
0	402
1	437
2	468
3	470
4	486
5	489
6	520
8	541
9	558
10	604

7.3 Full- and half-day schooling and extra classes

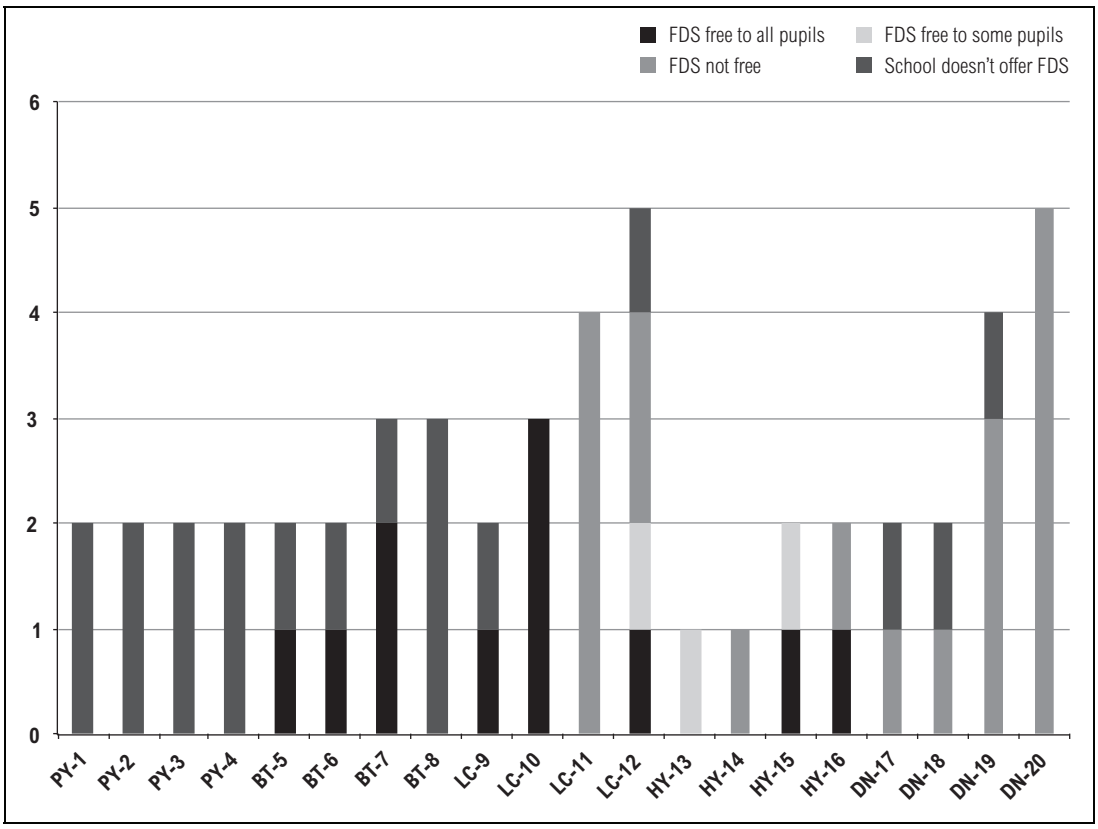
Instructional time has been identified by MOET as a key area of policy intervention. Vietnam has some of the lowest formal instructional hours in Asia, and evidence from the 2007 MOET and World Bank assessments of reading and mathematics identified a positive relationship between schools in which a larger proportion of children received full-day schooling and pupils' maths and Vietnamese scores. There is consensus that 'half-day schooling', equivalent to 23–25 instructional periods per week, is insufficient to cover the primary-school syllabus adequately, and that a transition to full-day schooling (FDS) is essential to bolster educational progress, while there is some debate about how additional instructional hours should be used and indeed about their effectiveness compared with alternative investments. A further motivation for reform lies in the expectation that the provision of FDS offers, to some extent, an alternative to the uptake of paid 'extra classes', which, where provided by the existing class teacher, are formally prohibited but remain prevalent in Vietnam.

The 2009–2020 Vietnam Education Development Strategic Plan includes the goal of achieving a full transition to at least 30 instructional periods per week for all pupils by 2020 (the T30 model), and 35 instructional periods per week by 2025 (the T35 model). The part-donor-funded School Education Quality Assurance Programme (SEQAP) project aims to facilitate the achievement of this goal in 35 selected disadvantaged provinces, with wealthier communes and provinces given responsibility for implementation according to the principle of 'socialisation' and with the collection of user fees. In the 35 selected provinces, schools that

are currently teaching on a half-day basis, or fewer than 30 or 35 periods per week, are targeted. It is expected that once this programme has been established in disadvantaged districts, transition to this model will be made across Vietnam. Two Young Lives provinces, Lao Cai and Ben Tre, contain districts included in the SEQAP intervention, and the school survey collected a range of data on instructional hours, at the school, class and child levels.

At the school level, 51.1 per cent of principals reported that their school offered FDS to all pupils, and a further 11.1 per cent reported offering it to some pupils. Among the schools whose principals stated that they offered FDS to all pupils, the overwhelming majority (75 per cent) reported offering it every day of the week. Just under half offered it at a cost to parents, and around 40 per cent offered it free to all pupils. Variation at the site level on the prevalence of fee-charging for FDS is shown in Figure 11. Principals of all schools in Ben Tre and Phu Yen which offered FDS stated that it is offered free of charge, while principals in Da Nang reported levying charges where FDS was available. Most schools in Lao Cai and Hung Yen offered FDS, but the pattern of charging was more variegated.

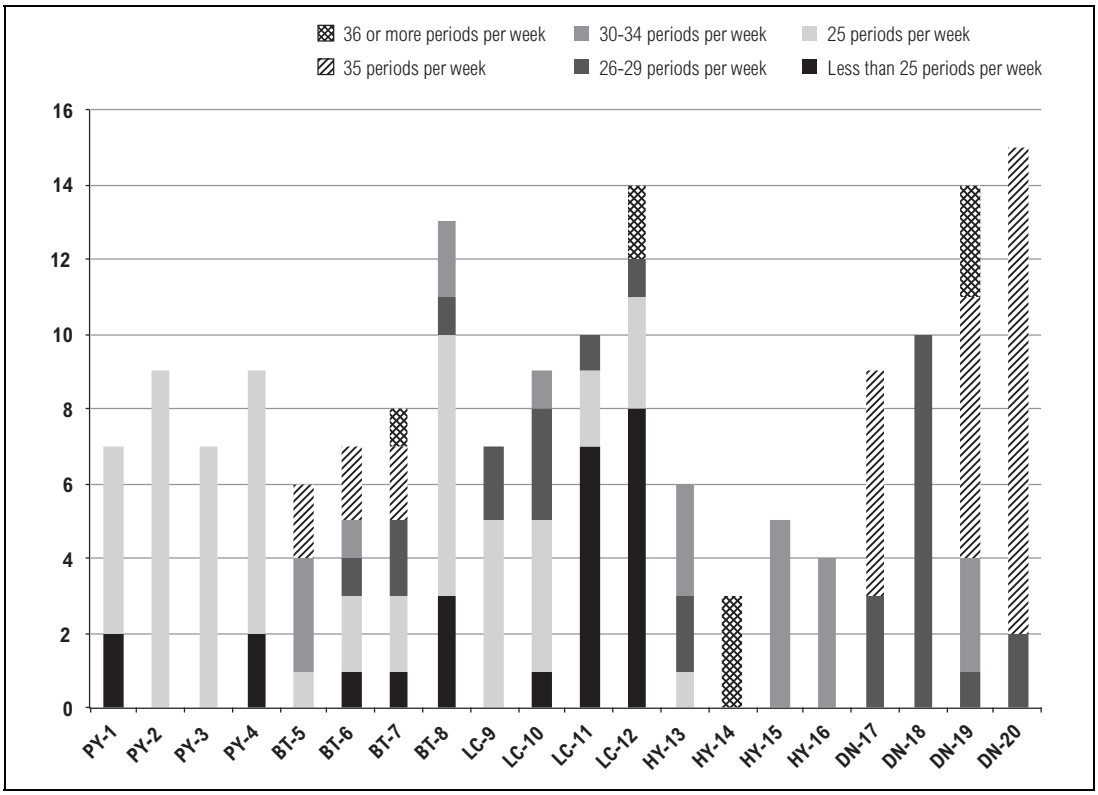
Figure 11. *Number of school groups offering full-day schooling free of charge, by sentinel site*



Data on the number of periods of instruction present a diverse picture across the sample sites, as shown in Figure 12. In Phu Yen, principals report that FDS is not offered, and – consistent with this – the number of periods per week in classes surveyed is always less than 30. In Hung Yen, while principals in all schools reported that FDS is offered, there is variation between sites in terms of the number of periods taught per week, presumably because it is offered in only some schools and classes. In Ben Tre sites BT-5 and BT-6, where principals in all schools had reported that FDS was offered, a great deal of variation between classes exists in the number of instructional periods. In Lao Cai, although principals stated

overwhelmingly that FDS was available, the number of instructional periods is most commonly 25 or fewer. In Da Nang, while there is variation both within and between sites in principals' reports of whether FDS was offered, using class-level data it is evident that in all but site DN-18 the majority of classes received 35 or more periods of tuition per week. The data draw attention to the complex pattern of instructional hours received, and potentially to varied understandings of the notion of 'full-day schooling'. However, it is clear that pupils in the more advantaged provinces of Da Nang and Hung Yen more often received instructional hours commensurate with the T30 and T35 models of FDS, while these models had been implemented in some of the sampled schools in the SEQAP provinces (Lao Cai and Ben Tre), and none in Phu Yen.

Figure 12. *Number of classes, by instructional periods per week and sentinel site*



Figures 13 and 14 present the average numbers of instructional hours in maths and Vietnamese according to whether classes are categorised as not offering FDS, or as conforming to the T30 and T35 models of FDS. Higher numbers of instructional hours are associated with a higher number of periods of tuition in maths and Vietnamese. Non-FDS classes most often teach between five and six hours of Vietnamese per week and between three and four hours of maths, while T35 classes most often teach seven to eight hours of Vietnamese and five to six hours of maths.

Figure 13. *Instructional hours in Vietnamese, by full-day schooling*

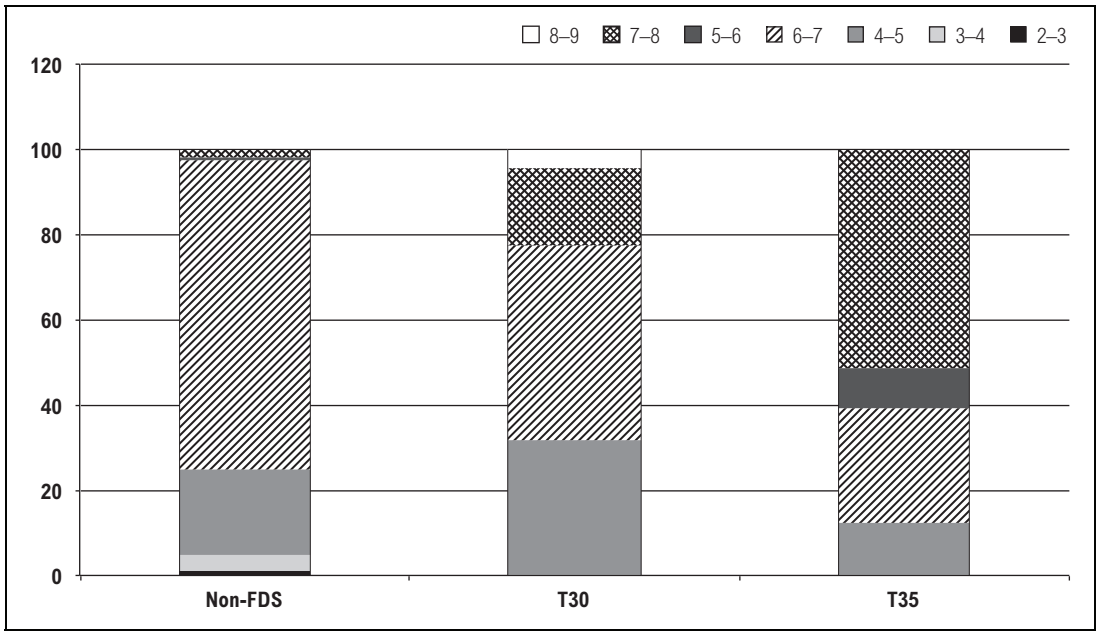
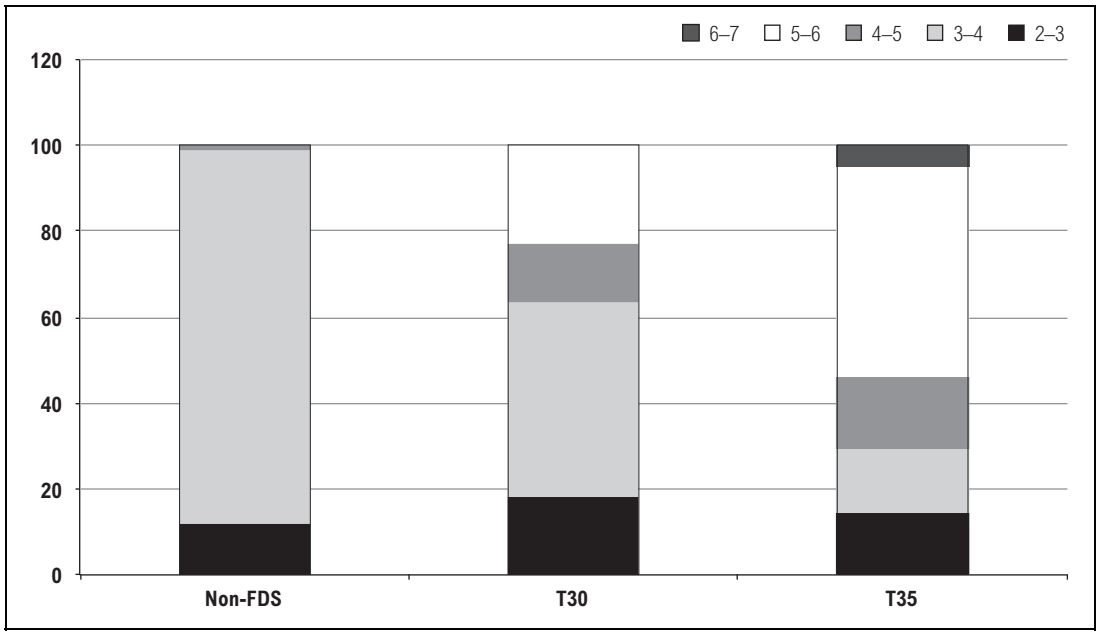
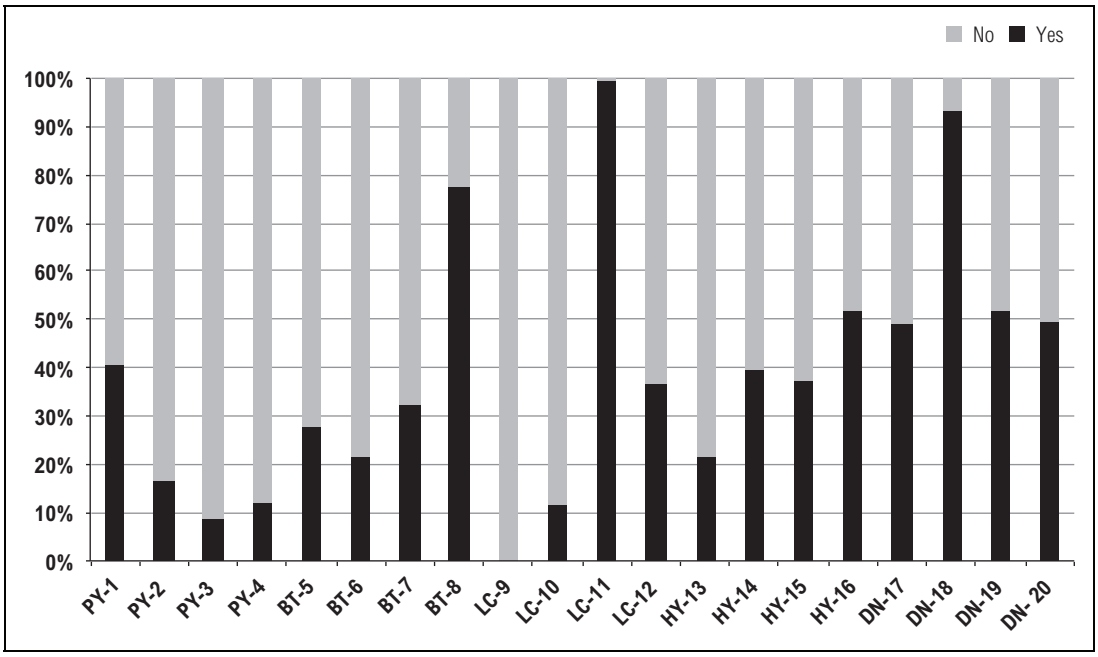


Figure 14. *Instructional hours in maths, by full-day schooling*



Significant site-level variation is also found in relation to the extent of attendance at 'extra classes' reported by pupils (Figure 15). No pupils in the most disadvantaged site in terms of home background (LC-9) attended extra classes, nor did they attend FDS. In a relatively advantaged Da Nang site (DN-18), where school- and class-level data indicate that FDS is not available, more than 90 per cent of pupils reported attending 'extra classes'. Also, in site LC-11 (the most advantaged of the Lao Cai sites) and in BT-8 (the most advantaged of the Ben Tre sites), where few classes are considered to offer FDS, a large majority of pupils attend 'extra classes', suggesting that where resources permit, pupils and families may seek to extend the instructional hours that they receive by attending 'extra classes'.

Figure 15. *Percentages of pupils attending extra classes, by sentinel site*



8. Learning progress in Grade 5 and pupils' backgrounds

We examine the effects of children's background characteristics on their achievement in maths and Vietnamese reading comprehension, using 'class fixed effects' so that differences between classes are removed and results compare children only with their class peers. Results are reported in Table 14 and are interpreted as conditional effects of a unit change in individual characteristics (explanatory variables) when holding all other variables constant. The first two columns report results of regressing initial test scores at the beginning of the school year (T1) on key background variables. The second pair of columns shows the results for the same models for the test scores at the end of the school year (T2). The third pair includes the initial test-scores at the beginning of the year as predictors (not shown in the tables[12]) additionally in modelling outcomes at the end of the year. The last pair is considered more robust estimates for 'causal interpretation', since the inclusion of initial scores may be expected to take account of a wide range of influences in the period before Grade 5, including home backgrounds and school experiences.

Notable results are that girls perform better in Vietnamese on both tests and on the second test even when controlling for their initial scores, with the gap remaining very similar in both tests, indicating no change in the relative advantage of girls in Vietnamese. While there is no significant difference between boys and girls on either test in maths, girls show a small advantage in the first test which is reversed in the second test (although again not significant),

12 In order to model the relationship between T1 and T2 scores taking into account the greater 'opportunity to progress' among pupils with initially lower scores, linear, quadratic and cubic terms for initial scores in both subjects are included in the models. This allows comparisons between pupils to be made net of initial scores, regardless of their initial starting points.

due to significantly greater progress among boys. Older pupils perform better in both subjects on both tests (and in maths when controlling for the initial test). Since the vast majority of pupils are in the right grade for their age (except repeaters), age largely represents differences in month of birth within the year, indicating a positive effect of being older on initial enrolment in school (i.e. 'season of birth'). The effect of having repeated a grade was consistently to reduce scores, including when controlling for initial scores, suggesting a persistent relationship which is expected, given that repetition is likely to be due to poor performance.

The effect of ethnic minority status is found to be negative at the beginning of the year, but in the second test and in terms of progress differences are not significant, indicating some reduction in the 'gap' in terms of curriculum mastery between minority ethnic pupils and Kinh, even when initial scores are fully accounted for. This suggests that the origin of the gap lies primarily in earlier experience, since there is no evidence of worsening inequality in Grade 5. A higher score on the home-possessions (assets) index and a larger number of meals eaten by pupils per day are significantly associated with higher scores on both tests in both subjects. Effects are, as expected, smaller when accounting for initial scores and are not significant, while remaining positive.

A positive effect of having their 'own place to study' and of 'reading books outside school' is found in relation to Vietnamese reading comprehension when controlling for initial scores, while in maths a negative effect of absenteeism and a positive effect of the number of hours spent on homework are found when initial scores are accounted for, and a negative effect of longer travel times to school is found in both subjects. On the individual tests, when not accounting for initial scores, associations are found in some cases in relation to larger numbers of siblings (negative), absenteeism (negative), father's literacy (positive) and use of a computer outside school (positive), as well as of possession of learning materials required for learning in each subject (positive).

The R-squared values for the T1 and T2 models are low, lying between 5 and 7 per cent and indicating that key background factors explain relatively little of the variation in test scores within classes. When the initial scores are included, however, the R-squared values rise to 25–26 per cent, indicating much greater explanatory power of the effects captured in these scores, including prior background and schooling, along with ability and effort. The intra-class correlation (ICC) estimate in each of columns 1–4 in Table 14 denotes the proportion of the variance in test scores which remains at the class level (including differences at higher levels) after accounting for the explanatory variables included, or the extent of residual within-class homogeneity in scores. These figures are relatively high, at between 32 and 48 per cent, indicating that a large part of the variation in scores remains due to differences between classes. While the inclusion of initial test scores and background characteristics explains up to 26 per cent of within-class variation in T2 scores, the ICCs in columns 5 and 6 show that differences between classes account for 38–45 per cent of the residual variance. The importance of differences between classes and schools in terms of 'value-added' to pupils' learning is considered in the next section.

Table 14. *Pupils' background characteristics, test scores and learning progress*[13]

	(1) Maths T1	(2) Viet T1	(3) Maths T2	(4) Viet T2	(5) Maths T2|T1	(6) Viet T2|T1
Male	-2.1426	-20.3524	2.8882	-19.3315	6.8362	-12.6761
	(-0.822)	(-6.835)***	(1.085)	(-6.538)***	(2.819)***	(-5.100)***
Age at first test	11.0488	9.7755	13.6184	7.8497	7.7991	2.4489
	(3.893)***	(2.784)***	(4.864)***	(2.247)**	(3.043)***	(0.808)
Ethnic minority	-11.7997	-17.6592	-5.6932	-7.1008	0.7194	0.2911
	(-1.786)*	(-1.907)*	(-1.013)	(-0.809)	(0.149)	(0.042)
Number of siblings	-0.9793	-1.9404	-0.6352	-0.7131	-0.0358	0.0308
	(-0.940)	(-1.902)*	(-0.642)	(-0.808)	(-0.040)	(0.035)
Time taken to get to school	0.0459	0.2263	-0.4944	-0.2635	-0.5204	-0.3107
	(0.234)	(1.151)	(-3.103)***	(-1.473)	(-3.589)***	(-1.849)*
Home possessions	6.6569	4.6007	3.4845	2.9332	0.4802	0.1488
	(4.082)***	(2.618)***	(2.017)**	(1.750)*	(0.319)	(0.096)
Meals per day	8.9324	13.4134	7.4324	10.6820	2.5359	5.0666
	(2.182)**	(3.029)***	(2.375)**	(2.773)***	(0.840)	(1.322)
Father literate in Vietnamese	14.8624	10.2751	10.0412	5.6119	4.9637	1.3182
	(2.459)**	(1.257)	(1.487)	(0.917)	(0.788)	(0.235)
Grade repeater	-32.4404	-38.8614	-28.8759	-25.5159	-12.2944	-8.3915
	(-4.468)***	(-4.390)***	(-4.155)***	(-3.872)***	(-2.112)**	(-1.549)
Own place to study at home	-1.2324	0.3557	-0.5933	6.7247	-0.0461	7.0226
	(-0.338)	(0.085)	(-0.161)	(1.766)*	(-0.014)	(2.282)**
Number of days absent in current school year	-5.8647	-5.6358	-2.7986	-2.3568	-1.6534	-1.1523
	(-2.753)***	(-2.217)**	(-2.722)***	(-1.823)*	(-1.928)*	(-1.027)
Uses a computer outside school	4.5551	10.4767	7.3642	6.4937	3.9679	2.0938
	(1.262)	(2.539)**	(2.387)**	(1.673)*	(1.481)	(0.634)
Reads books outside school	8.5258	7.3383	4.7866	13.1713	1.0484	9.2145
	(1.994)**	(1.703)*	(1.176)	(3.000)***	(0.321)	(2.317)**
Possessions for learning maths	10.9102	-	8.7923	-	3.3419	-
	(3.507)***		(2.474)**		(0.973)	
Hours spent on homework	0.6732	0.7637	3.2459	2.3466	2.8888	2.0069
	(0.507)	(0.418)	(2.448)**	(1.569)	(2.337)**	(1.561)
Possessions for learning Vietnamese	-	9.2030	-	5.4392	-	1.2762
		(3.533)***		(2.291)**		(0.581)
Constant	350.2154	364.4197	373.4751	399.9879	634.2208	966.5275
	(11.265)***	(9.735)***	(12.243)***	(10.618)***	(3.242)***	(4.469)***
Observations	2,697	2,697	2,698	2,698	2,698	2,698
R-squared	0.055	0.070	0.049	0.059	0.261	0.245
Number of classes	174	174	174	174	174	174
Intra-class correlation (ICC)	0.388	0.320	0.478	0.383	0.454	0.382

*** p<0.01, ** p<0.05, * p<0.1.Robust t-statistics in parentheses. Standard errors robust to data clustering.

13 Sample used for regression removes pupils for whom test scores or background data are missing, and pupils whose test scores are 'unreliable' based on the estimated standard error of measurement (SEM) in IRT, an analysis using the criterion that the SEM is greater than 16.7 per cent of the test score (indicating a wide confidence interval). This reduces the sample by 452 observations, effectively 'trimming' the sample, particularly at the lowest end of the distribution of test scores.

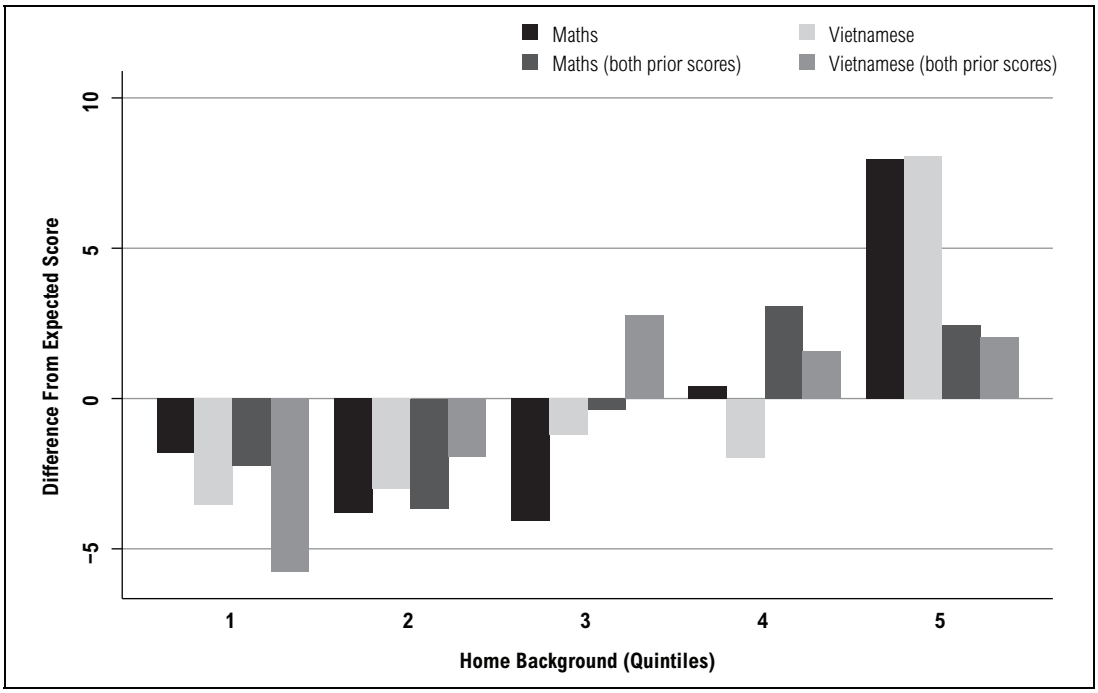
9. Learning progress and school, class and teacher factors

9.1 School and class 'value-added'

In order to examine the 'value-added' (VA) by schools and teachers to pupils' learning, it is important to take account of the differences in progress made by pupils starting at different levels of curriculum mastery in mathematics and Vietnamese, bearing in mind that it may be more difficult to make progress in absolute terms when starting from a higher initial level of mastery. Firstly, pupils are grouped into 100 percentile groups (of approximately 30 pupils) on the basis of their initial test scores in each subject separately. The mean end-of year test score, the 'expected second test score' for each percentile, is then calculated for each group, allowing the level of 'expected gain' to be different between groups, depending on their starting points, without imposing any particular general relationship. Second, a regression model is used to predict pupils' expected scores in each subject, based on their initial scores in both subjects.[14] Figure 16 shows the differences between expected and actual end-of-year scores (the average individual-level 'value-added') by pupils' home backgrounds, using five quintiles of the home background index. The most advantaged pupils achieved higher than expected scores on average in both subjects, but the difference is found to be notably smaller when their scores in both subjects at the beginning of the year are taken into account (using the regression compared with the mean method), which may be considered to account more fully for their prior learning. Pupils in the two least advantaged groups achieved lower than expected scores (lower individual 'value-added') on average, but it is notable that the differences are relatively small: when accounting for both initial test scores, the difference in the gaps between expected and actual scores was around 5 points in maths and around 8 points (compared with a mean score of 500 on the first test) in Vietnamese reading, suggesting that home background advantage plays a relatively small role in explaining how pupils progress in relation to their starting points in Grade 5. This is consistent with the relatively low 'within class' R-squared values in the previous section.

14 A linear regression model is used, but linear, quadratic and cubic terms for initial scores for both subjects are included as predictors, to allow a non-linear relationship according to which the 'progress gradient' may differ by initial starting points.

Figure 16. *Pupil-level differences between actual and expected scores on the end-of-year tests based on initial performance, by home background*

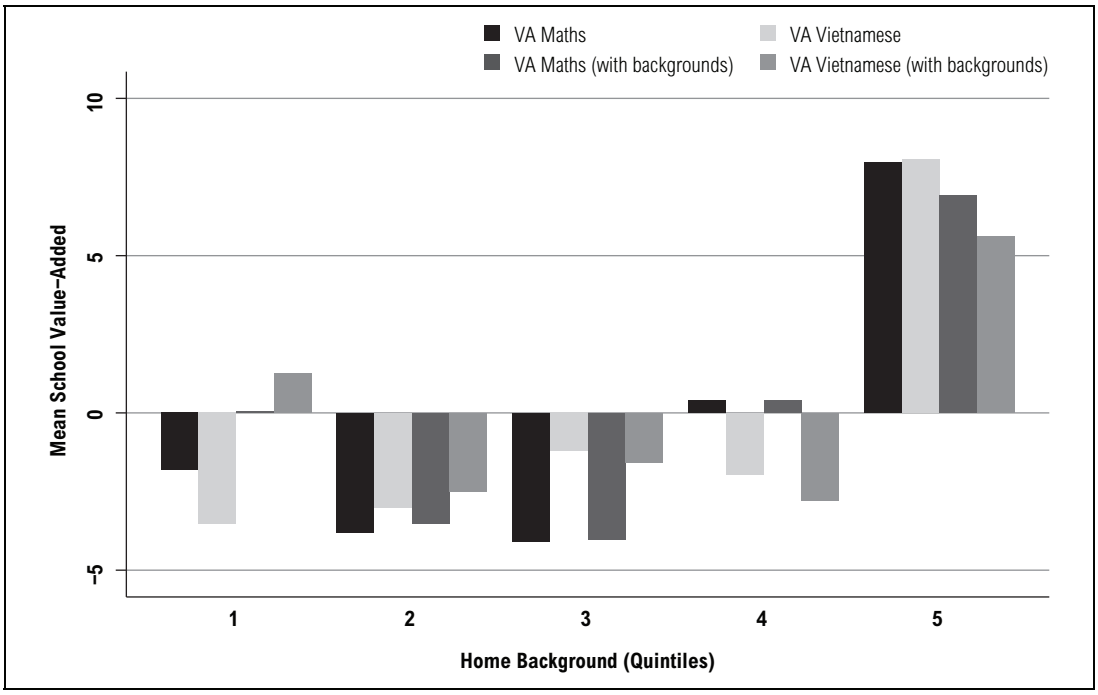


The difference between the pupils' actual end-of-year scores and their 'expected scores' in the same subject is aggregated at the school level to provide an estimate of the school's 'value-added': the average over-performance or under-performance of pupils within a school relative to a school consisting of 'average pupils'. In addition, regression modelling is used to estimate school value-added[15] when taking account of initial scores in both subjects and also accounting for the home backgrounds of pupils in each school. School-level 'value-added' may be considered as a summary measure of 'school quality', in the sense that it provides a measure of the 'difference made' at school level to children's test scores, over the period of six to eight months between tests. Figure 17 presents the results, showing 'school value-added' as calculated by both these methods, again by five quintiles of the home background index. The regression method makes use of the full set of home background indicators presented in Table 14.[16]

15 The estimated 'school effect' on pupils' test scores from a 'school fixed effects' regression model.

16 With the exception of those that may potentially be considered as 'responses to school quality', i.e. absenteeism, school materials, homework, use of a computer and reading books outside school.

Figure 17. *Average school-level 'value-added', by pupils' home backgrounds*



The pattern of results is fairly similar to that in Figure 16, but in this case shows that more advantaged pupils benefit from higher levels of school 'value-added' in both mathematics and Vietnamese, when estimated taking account only of pupils' initial scores; or, more generally, the pattern of results shows that more advantaged pupils attend somewhat higher- quality schools. When the backgrounds of pupils in each school are taken into account, however, pupils in the least advantaged group are not found, on average, to attend schools with lower than average 'value-added'. This 'contextual' measure of 'value-added' takes account of the potentially greater difficulty faced by schools in adding value to the learning of more disadvantaged pupils. The key differences between the highest and lowest quintiles of background scores were illustrated in Figure 7, indicating the high proportion of ethnic minorities in the lowest quintile. The differences in 'school quality' during Grade 5, summarised by 'value-added' at the school level, are relatively small overall, especially when taking account of backgrounds and initial scores in both subjects, explaining a difference between the home background groups of not more than 10 points on pupils' end-of-year tests. Accordingly, the evidence that more disadvantaged pupils are 'sorted into' lower-quality schools is relatively weak.

While not strongly linked to pupils' home backgrounds, there are nonetheless substantial differences in school-level value-added between schools in the school survey sample. Figures 18 and 19 show the estimates of school value-added and their 90 per cent confidence intervals for mathematics and Vietnamese, using the regression method, taking account of initial scores in both subjects only. Estimates of school value-added are statistically different from zero for more than half of schools in both subjects, and the highest and lowest value-added schools are associated with a difference of up to 50 or more points on their pupils' second-test scores, taking account of their starting points, while the estimated difference in 'value added' between the highest- and lowest-performing schools is greater than 100 points, or one standard deviation in test scores on the first test. In mathematics, the difference between the top and bottom third of schools in terms of value-added is similar to 'average learning' during Grade 5, indicating that school-quality variation is important in

determining pupils' learning. Given the relatively small number of schools in the sample, however, it is somewhat difficult to identify the school-level characteristics that are associated with 'school quality'. Moreover, there are also important differences within schools between classes and teachers, which may be expected to affect pupil progress. Characteristics of high and low 'value-added' classes are considered below.

Figure 18. *School 'value-added' during Grade 5 in maths*

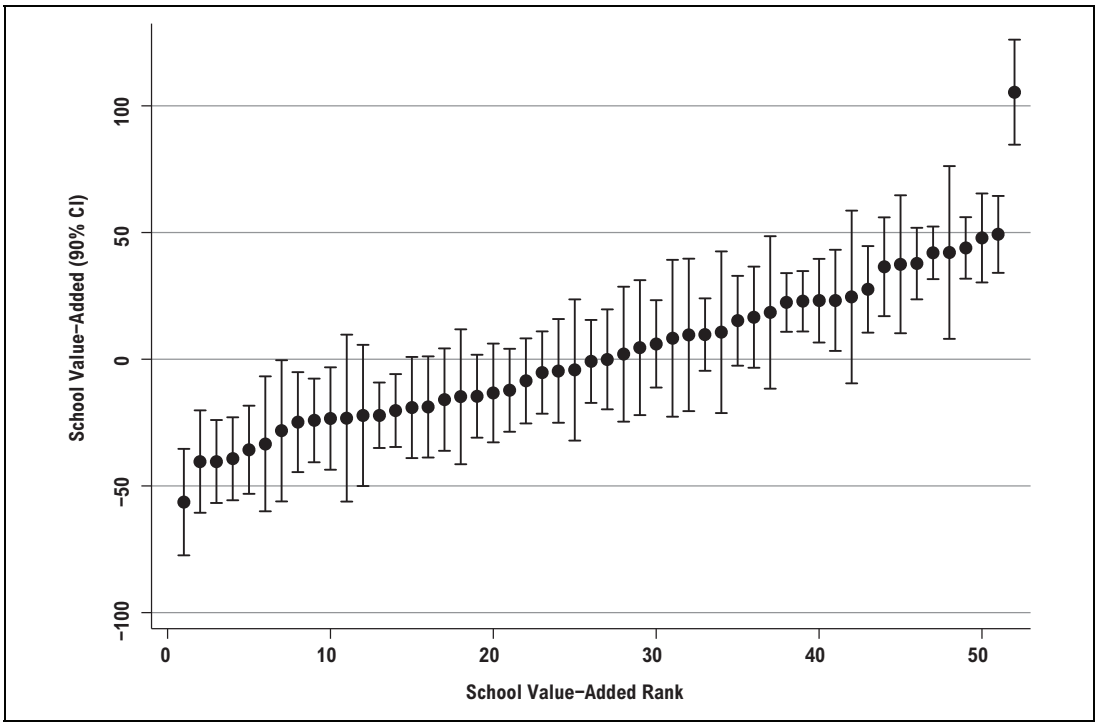


Figure 19. *School 'value-added' during Grade 5 in Vietnamese reading*

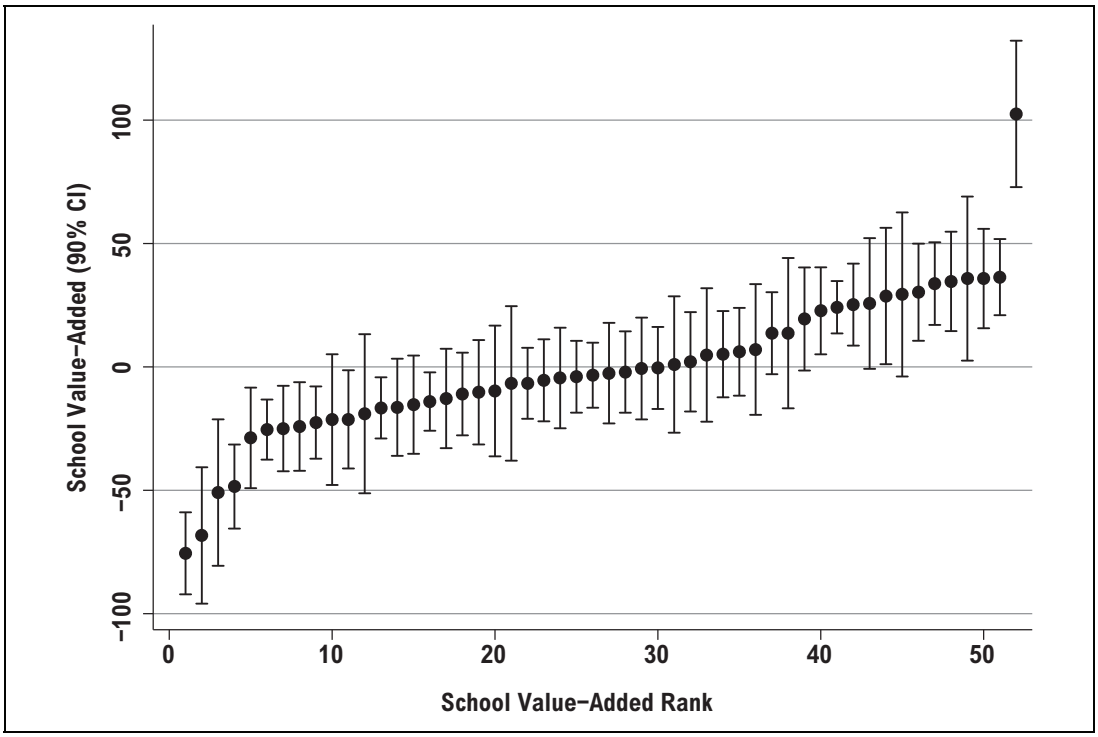


Table 15 reports the significant differences between high and low 'value-added' schools that do emerge in the sample. Schools which ranked in the top or bottom third of all schools on 'value-added' in both mathematics and Vietnamese are compared. The number of schools for comparison is small, at nine top-performers and 10 bottom-performers. There is no significant difference in the average test scores at the beginning of the year between these schools, while by the end of the year the differences are large in both subjects. The high-performing schools are found to have notably better facilities on average, when comparing values on the school-facilities index. In these schools, each Grade 5 class is more likely to have its own separate classroom, the school is more likely to have working electricity, and a higher proportion of teachers are qualified to degree level. In addition, the principals of these schools are less likely to originate from the province where the school is located, and the school is less likely to admit all pupils who apply, with the stated criterion for admission being in all cases 'area of residence'.

However, notably, both the high- and the low-performing schools serve pupils with lower average levels of background advantage than in the whole sample, and the high-performing schools are attended by a larger proportion of ethnic minorities. This finding may shed light on the relatively small differences in individual-level 'value-added' between more and less advantaged pupils shown above: while disadvantaged pupils were found to attend slightly lower-quality schools on average, some of the highest-performing schools in terms of value-added do serve relatively disadvantaged school populations. In the case of maths, for example, six out of the nine top-performing schools served pupils with greater than average home disadvantage, four of which are in the second and third most disadvantaged sites in the study, both of which are in Lao Cai province. A regression model was used to estimate 'value-added' at both school and class levels simultaneously[17] (using both initial scores only), and the combined results are shown in Figure 20 for mathematics. 'Value-added' estimates combine both school- and class-level estimates and are plotted alongside the rank of class-level home background disadvantage, using the average home background index score for each class. There is little relationship overall between class-level disadvantage and the total value-added at school and class-level combined, indicating that on balance the relationship between school quality and pupil backgrounds is weak.

17 A multi-level regression model with three levels: school, class and pupil.

Figure 20. *School and class value-added, by class-level home background*

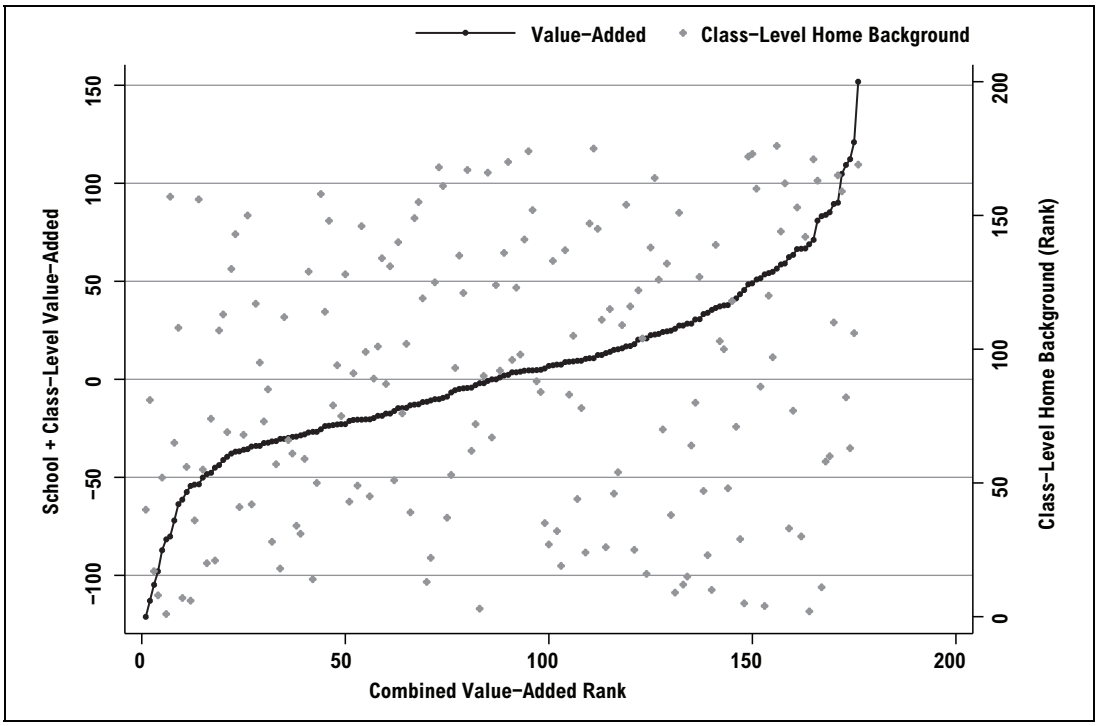


Table 15. *Comparison between high and low value-added schools (in both subjects)*

	High VA	Low VA	Significance of difference
School facilities index (average of school sites) (%)	55	34	-
Each Grade 5 class has a separate room (%)	100	80	*
Working electricity (average of school sites) (%)	100	79	*
Principal originates from the province (%)	33	80	**
All children who apply gain admission (%)	78	100	*
Teachers with degrees (%)	83	63	*
Average maths score (first test)	502.52	486.72	-
Average maths score (second test)	571.85	500.67	***
Average Vietnamese score (first test)	497.64	490.18	-
Average Vietnamese score (second test)	554.33	481.41	***
Average pupil-background index	-0.43	-0.50	-
Ethnic minority children (%)	31	17	-

t-test significance:*** p<0.01, ** p<0.05, * p<0.1

Given the larger number of classes in the sample (176), we may expect to find a larger range of statistically significant differences between them when comparing high and low value-added classes. In order to examine in more detail the range of school-, class- and pupil-level influences on progress, class-level value-added was estimated, using a regression model including both initial scores and also pupils' background characteristics, so that the likely greater difficulty of adding value to less advantaged pupils' scores is accounted for. However, the inclusion of individual pupil backgrounds changes the value-added estimates only marginally, and the highest- and lowest-performing classes are essentially the same classes, whether account is taken of backgrounds or not. The model also takes account of value-

added at the school level to avoid confounding between school- and class-level influences.[18] The results for class 'value-added' only are reported in Table 16 for the highest- and lowest-performing classes. These are selected as for the schools above, using the classes which are found in the top and bottom third of the sample on 'value-added' in both subjects – 34 high-performing and 29 low-performing classes from a total of 176 overall.

High-performing classes are found to have better levels of assets and facilities in general, when comparing the class-assets index; and specifically in relation to several individual indicators, as shown below. Teachers in these schools always had permanent contracts, while a small but significantly different proportion of teachers in low-performing schools were on temporary contracts. Teachers in high-performing schools, like principals, were less likely to originate from the province in which they were working. They had been evaluated more often in the previous year and were less likely to support their incomes with additional work outside school. Interestingly, teachers in low-performing schools set more homework tasks per week in both mathematics and Vietnamese (although their pupils did not spend more time on homework). Five teacher-attitude questions produced significant differences between the two sets of teachers. Four of these showed higher levels of 'efficacy' for teachers in high-performing classes, who were, in the case of the first question, more likely to believe that their training had prepared them to deal with students' learning problems. They were less likely to believe that pupils' home backgrounds are a dominant influence on what they are able to learn (in relation to three questions on general teaching efficacy). But when asked specifically in relation to themselves (on one question concerning personal teaching efficacy), teachers in low-performing schools were less likely to believe that they personally were limited by pupils' background influences in what they (the teachers) could achieve.

Teachers were asked to report their own assessments of pupils in mathematics and Vietnamese, along with an assessment of their overall academic ability at the beginning of the school year. Teachers in higher-performing classes reported significantly higher values on average on each measure. On Young Lives tests, there was no significant difference between the average test scores of the two groups of classes at the beginning of the year in mathematics, while higher-performing classes had higher initial Vietnamese scores. Pupils in the lowest-performing classes, however, did not have lower-than-average initial scores when compared with the whole sample, although they did by the time of the second test. In mathematics, average scores in the highest-performing classes increased by more than twice the average gain across the whole sample, and the average scores in the lowest-performing classes decreased slightly, while the pattern was even stronger in Vietnamese. The difference between the average scores in the two groups of classes was greater than one standard deviation (100 points) by the end of the year, increasing five-fold, from around one-fifth of a standard deviation at the beginning of the year. In mathematics the difference is equivalent to more than two years' 'average learning' in Grade 5.

18 A multi-level regression model with three levels: school, class and pupil.

Table 16. *Comparison between high and low value-added classes (in both subjects)*

	High VA	Low VA	Significance of difference
Class characteristics			
Class-assets index	0.16	-0.21	*
Adequate electric lighting	1.0	0.93	*
Fan	0.97	0.79	**
Overhead projector	0.12	0.00	**
Storage cabinet	0.91	0.76	**
Teacher characteristics			
Temporary contract	0.00	0.07	*
Teacher originates from the province	0.62	0.83	**
Number of evaluations of the teacher last year	8.38	6.17	*
Teacher does additional work outside school	0.06	0.17	*
Number of homework tasks set per week in maths	2.53	4.31	**
Number of homework tasks set per week in Vietnamese	3.82	6.17	**
Pupil characteristics (class average)			
Proportion of boys	0.50	0.54	*
Mean of home-possessions index	0.12	-0.21	*
Mean of background index	-0.02	-0.25	-
Mean minority	0.17	0.10	-
Mean hours of extra classes in 'other subjects' attended	0.65	0.28	**
Proportion of grade repeaters	0.03	0.07	***
Mean number of meals eaten per day	2.89	2.82	*
Teacher reports about pupils (class average)			
Vietnamese score (0–10 scale)	8.22	7.75	**
maths score (0–10 scale)	8.39	7.68	***
Academic ability (1–5 scale)	3.64	3.49	**
Problem of lateness (a major or minor problem)	0.26	0.45	**
Problem of lack of materials among pupils (a major or minor problem)	0.24	0.48	**
Teacher attitudes (1=strongly agree 2=agree 3=disagree 4=strongly disagree)			
The amount a student can learn is primarily related to family backgrounds	3.08	2.82	**
I have not been trained to deal with many of the learning problems that my students have	3.00	2.79	*
I am very limited in what I can achieve, because a student's home environment is a large influence on his/her achievement	1.97	2.17	*
The influence of a student's home experience can be overcome by good teaching	2.03	2.28	*
Even a teacher with good teaching abilities may not reach many students	2.94	2.69	*
Pupil test scores (class average)			
Average maths score (first test)	520.17	503.40	-
Average maths score (second test)	612.03	496.13	***
Average Vietnamese score (first test)	522.10	500.96	*
Average Vietnamese score (second test)	588.05	466.91	***

Teachers were also asked to report key problems that they faced in teaching their pupils. Significant differences are found in relation to reporting of the problem of lateness among pupils and reporting of pupils attending school with inadequate learning materials, both of which were more likely to be reported among teachers with low-performing classes. In terms of the pupils' characteristics, while individual characteristics had been taken account of in the estimation of 'value-added', results show some differences in terms of class-level average characteristics. Low-performing classes consisted of a higher proportion of boys and a higher proportion of grade-repeaters. Also at the class-average level, low-performing classes contained pupils who eat slightly fewer meals and have lower levels of home possessions on the composite index. These pupils also attended fewer hours of 'extra classes' in 'other subjects' (but not in mathematics or Vietnamese). On the composite home background index (which includes indicators of minority status and parental literacy as well as home possessions), there is no significant difference between the mean values for the two groups of classes. There is no significant difference between the proportions of ethnic minorities in the two groups of classes, and the proportion of minorities in the highest-performing classes is not lower than in the whole sample.

10. Learning progress, academic self-concept and academic stress

Traditional Confucian-heritage culture and contemporary Vietnamese society both value learning and the importance of individual effort highly, and the demands of both school education and 'extra classes' are subjects of perennial debate in Vietnam. Accordingly, the School Survey contained questions designed to assess potential 'non-cognitive' influences on learning, in the forms of 'academic self-concept' and 'academic stress'. Academic self-concept can be generally defined as a pupil's self-perception of his or her own academic performance, which is at least in part a relative concept, defined in relation to a peer group (Liu and Wang 2008; Marsh and Hau 2003). While a higher level of academic self-concept is expected to be associated with higher levels of academic performance, educational aspirations and school completion, the effects of stress are more ambiguous and may be expected to be negative when levels of stress are very high, while stress may also be associated with higher levels of effort and aspiration.

A 20-item academic-self-concept scale taken from Liu, Wang and Parkins (2005) was employed as part of the pupil questionnaire, consisting of two sub-scales designed to measure academic confidence (10 items) and academic effort (10 items). Responses to each item were selected by pupils on a four-point Likert scale, ranging from 'strongly agree' to 'strongly disagree'. Scores were calibrated on a common scale[19] to provide a single measure of academic self-concept, using Item Response Theory. Table 17 reports summary statistics for both academic confidence and academic effort which indicate small average gains in self-

19 Results are estimated using a one-parameter IRT (Rasch) model with responses recoded to dichotomous (agree and disagree), since estimation using a partial-credit IRT model with the full range of polytomous responses did not support a distinction between 'strongly agree' and 'agree' or 'strongly disagree' and 'disagree'.

rated academic confidence and effort over the school year (significant only for academic confidence). This may suggest possible 'dynamic complementarity' or 'self-productivity' in skills acquisition whereby skills acquired enhance the subsequent acquisition of skills (Heckman 2007).

Table 17. *Academic confidence and effort in Grade 5*

	First test		Second test		
	Mean	SD	Mean	SD	Difference
Academic-confidence score	1.613539	1.029975	1.675048	1.030876	.0615099**
Academic-effort score	1.216562	1.322737	1.222963	1.346256	.0064013

t-test significance: *** p<0.01, ** p<0.05, * p<0.1

Table 18 compares students' results for academic confidence and academic effort by gender, ethnic group and province. Gender and ethnic group differences are found, with girls demonstrating higher scores for academic confidence and academic effort than boys, and ethnic minority children typically, perhaps surprisingly, having slightly higher scores than their Kinh counterparts on average for academic confidence at the end of the school year. There are also some apparent differences between provinces, with the highest scores being found in Hung Yen province.

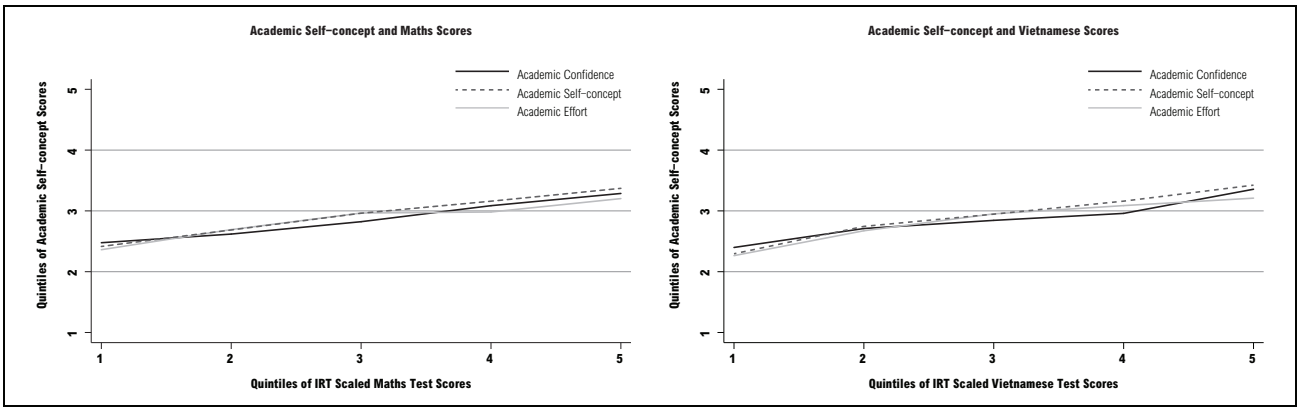
Table 18. *Academic confidence and effort, by gender, ethnic group and province*

	Gender	Academic confidence		Academic effort	
		First test	Second test	First test	Second test
Gender	Boy	1.544019	1.593605	1.174037	1.198005
	Girl	1.666414	1.72817	1.274451	1.239373
	Difference	.1223947**	.1345657**	.1004139**	.0413685
Ethnic group	Kinh	1.599841	1.646662	1.233737	1.212981
	Minority	1.644967	1.773918	1.14502	1.271897
	Difference	.0451251	.1272558**	.088717	.0589162
Province	Ben Tre	1.594012	1.721625	1.076362	1.159025
	Da Nang	1.588068	1.602845	1.128523	1.236319
	Hung Yen	1.866932	1.876902	1.198911	1.075107
	Lao Cai	1.518219	1.532285	1.326204	1.217424
	Phu Yen	1.551791	1.676624	1.431589	1.357704

t-test significance: *** p<0.01, ** p<0.05, * p<0.1

Academic self-concept is an important outcome of schooling, but is also valued for its mediating effect on students' academic achievement. Comparing the academic-confidence and academic-effort scores with cognitive achievement in the maths and Vietnamese tests, a positive relationship is found at both the beginning and end of the school year, as shown in Figure 21, with the relationship being slightly stronger for Vietnamese.

Figure 21. *Academic non-cognitive scores and maths and Vietnamese test scores*



Due to the importance of an individual's peer group for the development of academic self-concept, it is important to examine the relationship between academic confidence and academic effort and cognitive outcomes *within classes.* A regression model is employed, taking account of the same pupil-background characteristics as in Table 14 (not shown), plus the academic-confidence and academic-effort scores and also the scores for academic stress. Academic stress was measured by means of the academic-stress scale developed by Hesketh et al. (2010).[20] Results are reported in Table 19. The first two columns use the beginning-of- year test scores as the outcome, the second two columns the end-of-year test scores; the last two columns use the end-of-year test scores, while also taking account of the initial scores at the beginning of the year.

The results show that differences in academic confidence at the beginning of the year are statistically significant in relation to performance in maths and Vietnamese within classes when controlling for a range of background characteristics, both at the beginning and end of the year. The relationship remains significant when controlling for initial test scores, providing strong evidence that, independent of academic performance, academic confidence has a beneficial effect on learning progress in both subjects. With regard to academic effort, there is a significant relationship with both initial test scores and with the end-of-year test score in maths, but not when controlling for initial scores – so that there is less evidence for a causal impact of self-perceptions of academic effort. There are no significant relationships between test scores and academic stress. The pattern of results demonstrates weak (non-significant) evidence that pupils who reported higher levels of stress at the beginning of the year were lower performers, but that stress was positively associated with learning progress. A potentially non-linear relationship between academic stress and performance, or a dominance of differences between, rather than within, class differences in levels of academic stress are areas for further investigation.

20 Scores are computed using a one-parameter IRT (Rasch) model, using dichotomised responses.

Table 19. *Academic non-cognitive skills and achievement in maths and Vietnamese*

	Maths T1	Viet T1	Maths T2	Viet T2	Maths T2|T1	Viet T2|T1
Academic effort	4.1311	2.8612	3.0451	1.4861	1.0700	-0.3456
	(3.594)***	(2.096)**	(2.657)***	(1.066)	(1.116)	(-0.288)
Academic confidence	4.9909	11.4195	6.5855	7.0704	3.3693	3.0935
	(3.248)***	(6.513)***	(4.609)***	(5.013)***	(2.713)***	(2.487)**
Academic stress	-1.4530	-0.7648	-0.0812	0.1383	0.5602	0.6957
	(-1.394)	(-0.619)	(-0.082)	(0.122)	(0.617)	(0.701)
Observations	2,348	2,348	2,350	2,350	2,350	2,350
R-squared	0.073	0.098	0.062	0.065	0.271	0.243
Number of class	168	168	168	168	168	168

*** p<0.01, ** p<0.05, * p<0.1. Robust t-statistics in parentheses. Standard errors robust to data clustering.

11. Learning progress over the longer term

All Young Lives Younger Cohort index children (of whom the school survey sample is a sub-sample) were included in surveys conducted in 2002, 2006, and 2009, when they were aged approximately 1, 5 and 8 years. Instruments included cognitive tests at the ages of 5 and 8. These data permit a consideration of some of the potential longer-term influences on school performance, including health, nutrition and poverty in early life. The school survey sample differs somewhat from the total household sample, since it includes only children enrolled in Grade 5, representing a slightly more advantaged group than the household sample as a whole (as explained in Appendix B).

11.1 Early childhood nutrition and learning development between the ages of 1 and 10

The development of cognitive skills begins in the earliest stages of a child's life and is linked to household-background advantage from the outset, including through early childhood health and nutrition. The negative effects of these very early influences may persist in the long term, but may also, under certain circumstances, be wholly or partially remedied as a result of later positive developmental influences. Poverty is a major reason for malnutrition, which can be observed in the form of low 'weight-for-age' (wasting), low 'height-for-age' (stunting), or both. These effects of malnutrition, and especially stunting, are often the result of inadequate nutrition and/or poor dietary quality during the first two years of life and also of infections in early childhood which impede the effects of food intake on growth development.

Regarding 'recovery' from stunting, a study by Schott et al. (2013), employing Young Lives data from Vietnam, finds that among sample children who were stunted at age 1, 44.5 per cent experienced sufficient growth recovery that they were not considered stunted by the age of 8 years, while the remainder continued to be stunted at age 8. Growth recovery was also found to be associated with improved cognitive achievement, so that very early disadvantage linked to nutrition was not found to be linked to poorer cognitive outcomes in all cases. Le Thuc Duc and Behrman (2013) estimate the effect of early childhood stunting and growth

recovery in the post-infancy period on learning achievement in mathematics and in Vietnamese during Grade 5, using the Young Lives school survey data combined with household data from when the children were 1 year old.[21] Their results also show that the damage of early childhood poverty remains evident in the data at age 8, but for those children whose households showed relative poverty reduction or improved economic prosperity after the age of 1, a part of the gap was closed; and that growth recovery has a positive influence on learning achievement in mathematics and Vietnamese in Grade 5, to some extent narrowing the gap observed in cognitive scores recorded in the household when the children were aged 8. This finding is encouraging, in that it suggests potential for successful interventions aimed at supporting 'catch-up' for children in the most disadvantaged circumstances in early childhood.

11.2 Cognitive development between the ages of 5 and 11

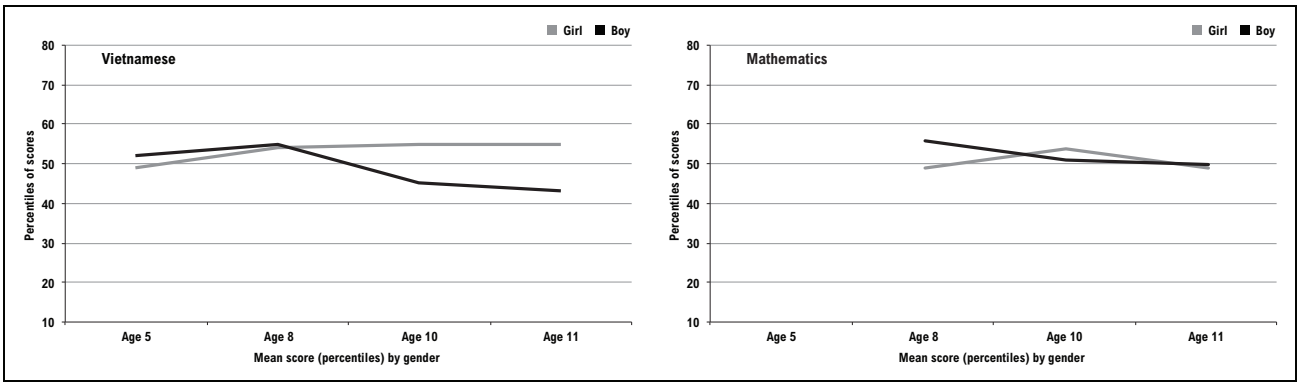
The first tests of learning achievement, in receptive vocabulary,[22] were conducted when the Younger Cohort children were aged 5, followed at the age of 8 by tests in both receptive vocabulary and mathematics which provide an opportunity to examine how cognitive skills develop over time, using the household test (ages 5 and 8) and school test (ages 10 and 11). However, the tests administered in the household and school follow different designs and cannot be linked on a common scale, so that some part of the trends observed may be due to differences in the effects of test design, and interpretation may be indicative only. Also, owing to the orientation of the school tests towards the 'fixed' target of Grade 5 curriculum mastery, we expect in general that initially lower-performing pupils will make more progress in terms of absolute scores. In the following analysis, the relative positions of pupils from different groups are compared (using their average percentile ranking on each test). The sample used is those pupils included in both school and household tests.

With respect to gender, Figure 22 presents the longer-term relative trends. The gender gap in Vietnamese is small at the ages of 5 and 8, when measured in terms of verbal ability (not reading). It is wider at ages 10 and 11, showing an advantage for girls, which may be interpreted as due to girls' earlier mastery of and sustained advantage in reading skills. In mathematics, boys performed slightly better at age 8, but in the school test at age 10 the relative positions had reversed, favouring girls slightly. However, by age 11 no difference in maths performance is found, which suggests that while gender is an important predictor of reading skills, there is greater equality in maths.

21 As not all the children made it to Grade 5 to participate in this school survey, a Censored Least Absolute Deviation (CLAD) model is employed to deal with non-participation. The CLAD model controls for child characteristics such as gender, length in pre-term (in weeks), height-for-age (HAZ) in Round 1 of the Young Lives survey (2002), birth order and ethnicity. The household characteristics controlled for include household wealth, mother's education, father's education, mother's height, and mother's age in Round 1. Finally, regional variables are also controlled for.

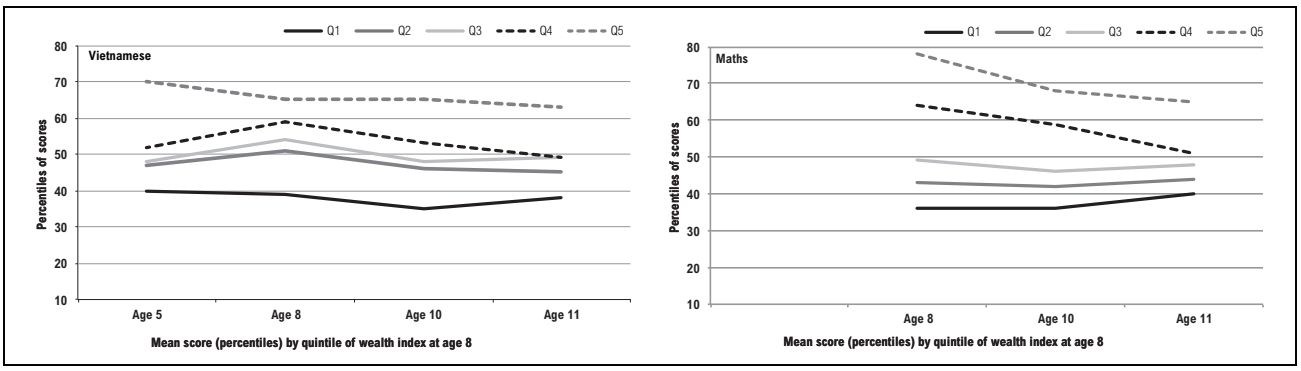
22 The Peabody Picture Vocabulary test (PPVT).

Figure 22. *Evolution of learning achievement, by gender*[23]



With respect to the relationship between wealth and learning achievement, as shown in Figure 23, results show that inequality in Vietnamese has changed little over time, although there appears to be a reduction in the initial advantage of the pupils from the very wealthiest households, which may have been due initially to their earlier enrolment in pre-school, or better pre-school learning as a result of home influences. In mathematics, there is an apparent narrowing of gaps between the ages of 8 and 10, while the change between ages 10 and 11 is more likely the effect on progress of differences in curriculum mastery at age 10. Nonetheless, the notable loss of initial advantage at age 8 for wealthier pupils, in common with the pattern for Vietnamese, may indicate an 'equalising effect' of school exposure.

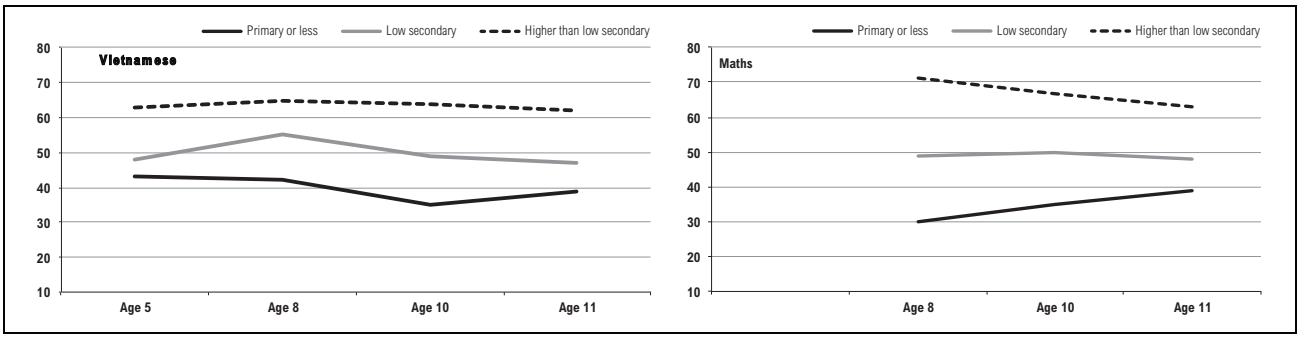
Figure 23. *Evolution of learning achievement, by wealth*



A somewhat similar picture is observed in relation to children's backgrounds in terms of parental education, as shown in Figure 24. The gaps in Vietnamese achievement (receptive vocabulary at ages 5 and 8 and reading at ages 10 and 11) between children with more highly educated parents (higher than lower-secondary level) and children with less well educated parents (primary or less) were similar before school enrolment at age 5 and in Grade 5 at ages 10 and 11. Inequality in mathematics achievement did reduce as children progressed through the grades, however. This may be linked to the greater role played by schooling, and the lesser role of home background, in mathematics learning by comparison with language acquisition and reading.

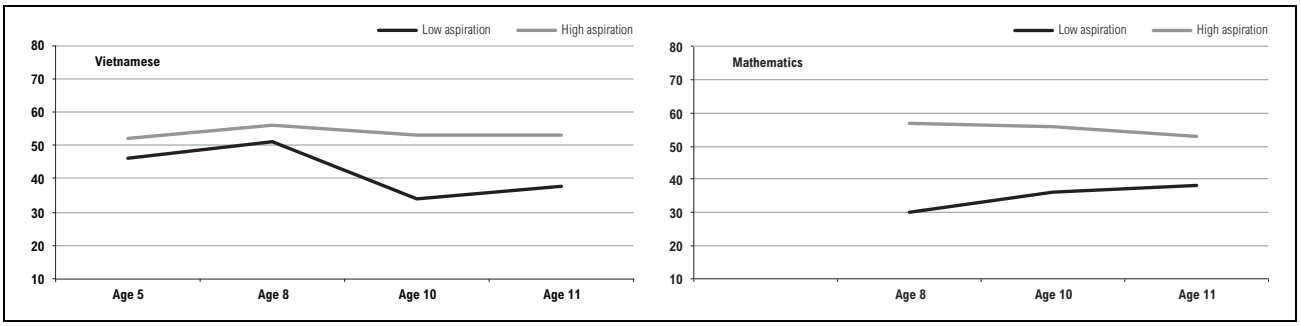
23 The vertical axis represents the distribution of the children by score expressed in percentiles, so that each percentile group represents 1 per cent of the total sample of 1,138 pupils, or around 11 pupils.

Figure 24. *Evolution of learning achievement, by parents' education*



Finally, in Figure 25, the data are compared according to levels of parental aspirations for their child's educational progression. Gaps in performance between children whose parents had higher and lower aspirations[24] are found to increase between age 5 and Grade 5 in Vietnamese, and to decrease somewhat between age 8 and Grade 5 in mathematics. However, gaps in mathematics were already relatively large at age 8, while they were much smaller in Vietnamese (receptive vocabulary).

Figure 25. *Evolution of learning achievement, by parental aspiration*



24 Parental aspirations are measured before children entered school (at 5 years old) by asking the parents the question: 'Ideally what level of formal education would you like the child to complete?' Parental aspirations are defined as low if their answer identifies Grade 1 to Grade 12, post-secondary or vocational education, and high if they answer 'university'.

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Appendix A: Summary tables

Table A1. *Child characteristics, by site (ordered by home background disadvantage)*

Site	Province	Home background index	Ethnic minority	Own study place	Child learning materials	Number of siblings	Days absent	Mother has college education	Own dictionary	Own calculator	Own mobile phone	Own maths textbook	Own Vietnamese text book
9	Lao Cai	-7.27	0.99	0.14	-3.38	2.51	2.35	0.01	0	0	0.01	0.95	1
12	Lao Cai	-2.22	0.62	0.5	-0.88	1.49	1.11	0.03	0.01	0.05	0.04	0.95	0.98
10	Lao Cai	-1.39	0.6	0.72	-0.58	0.69	0.44	0.11	0.07	0.17	0.02	0.92	0.93
3	Phu Yen	-1.2	0.32	0.71	-0.17	0.99	2.7	0.06	0.13	0.07	0.12	0.94	0.94
11	Lao Cai	-0.77	0.33	0.59	0.33	1.06	0.52	0.05	0.04	0.09	0.06	0.97	0.99
5	Ben Tre	-0.5	0	0.75	-0.22	1.66	0.91	0.13	0.12	0.12	0.07	0.93	0.95
4	Phu Yen	-0.41	0.01	0.81	-0.28	1.18	0.9	0.03	0.29	0.15	0.12	0.91	0.93
6	Ben Tre	-0.32	0.01	0.81	-0.26	0.94	1.14	0.11	0.29	0.21	0.14	0.93	0.94
2	Phu Yen	-0.06	0	0.79	-0.24	0.93	2.18	0.02	0.15	0.19	0.09	0.93	0.94
7	Ben Tre	-0.04	0.01	0.9	-0.14	0.84	0.32	0.04	0.11	0.11	0.09	0.97	0.96
16	Hung Yen	0.28	0.01	0.81	-0.44	0.95	1.2	0.08	0.04	0.05	0.03	0.97	0.97
15	Hung Yen	0.4	0.01	0.79	-0.12	0.91	0.51	0.12	0.1	0.07	0.03	0.99	1
1	Phu Yen	0.43	0.01	0.87	0.16	0.97	0.31	0.05	0.16	0.24	0.08	0.99	0.99
8	Ben Tre	0.5	0.01	0.86	0.19	0.97	0.81	0.13	0.32	0.15	0.23	0.97	0.97
13	Hung Yen	0.62	0.03	0.94	0.06	0.92	0.2	0.15	0.11	0.08	0.05	0.98	0.97
19	Da Nang	0.71	0	0.87	0.37	1	0.63	0.11	0.24	0.19	0.1	0.97	0.98
14	Hung Yen	0.84	0.01	0.9	0.38	1.25	1.67	0.1	0.66	0.2	0.05	0.99	1
20	Da Nang	0.97	0.01	0.88	0.59	1.06	0.64	0.17	0.31	0.14	0.18	0.99	1
17	Da Nang	1.69	0.01	0.91	0.71	1.03	1.08	0.26	0.38	0.13	0.18	0.99	1
18	Da Nang	2.52	0.02	0.98	1.1	1.04	0.64	0.54	0.56	0.32	0.47	0.96	1
Total		**0**	**0.12**	**0.8**	**0**	**1.08**	**0.94**	**0.13**	**0.22**	**0.14**	**0.13**	**0.96**	**0.97**

Table A2. *Child learning indicators, by site (ordered by home background disadvantage)*

Site	Province	Homework tasks set per week		Teacher always or frequently checks homework		Attends extra classes (hours per week)		Spends more than 1 hour per day on homework	Borrows books from a school library	Uses a computer outside school	Reads books outside school
		Maths	Viet'	Maths	Viet'	Maths	Viet'				
9	Lao Cai	1	1	0.33	0.25	0	0	0.26	0.01	0	0.2
12	Lao Cai	3.04	2.24	0.68	0.52	1.12	1.12	0.9	0.14	0.07	0.8
10	Lao Cai	1.92	1.91	0.38	0.33	0.23	0.14	0.86	0.27	0.2	0.91
3	Phu Yen	1.89	1.28	0.33	0.3	0.16	0.12	0.81	0.31	0.12	0.91
11	Lao Cai	1.98	1.59	0.5	0.37	4.12	4.01	0.78	0.5	0.15	0.85
5	Ben Tre	1.93	1.6	0.42	0.36	0.41	0.31	0.82	0.48	0.18	0.89
4	Phu Yen	2.66	2.35	0.45	0.37	0.4	0.18	0.85	0.22	0.26	0.83
6	Ben Tre	1.34	0.89	0.29	0.22	0.31	0.19	0.91	0.65	0.21	0.93
2	Phu Yen	2.69	2.04	0.3	0.23	0.34	0.26	0.85	0.18	0.21	0.83
7	Ben Tre	1.94	1.49	0.44	0.37	0.61	0.57	0.86	0.56	0.14	0.94
16	Hung Yen	2.63	1.94	0.75	0.51	1.87	1.49	0.95	0.16	0.08	0.92
15	Hung Yen	2.61	1.93	0.59	0.52	1.14	0.78	0.9	0.19	0.12	0.89
1	Phu Yen	1.86	2.06	0.32	0.28	1.96	0.72	0.92	0.62	0.29	0.88
8	Ben Tre	2.29	1.47	0.49	0.37	0.36	0.25	0.94	0.62	0.38	0.86
13	Hung Yen	3.13	2.76	0.44	0.35	0.36	0.33	0.88	0.15	0.21	0.92
19	Da Nang	1.27	0.6	0.12	0.05	1.77	1.46	0.83	0.33	0.42	0.89
14	Hung Yen	3.83	2.51	0.54	0.36	1.15	0.2	0.98	0.13	0.15	0.94
20	Da Nang	1.28	1.44	0.13	0.16	1.79	1.48	0.8	0.54	0.49	0.91
17	Da Nang	2.79	2.88	0.63	0.62	1.55	1.51	0.84	0.68	0.64	0.96
18	Da Nang	2.99	1.33	0.53	0.13	4.38	3.23	0.83	0.39	0.86	0.96
Total		**2.19**	**1.71**	**0.41**	**0.31**	**1.31**	**1.03**	**0.85**	**0.39**	**0.3**	**0.87**

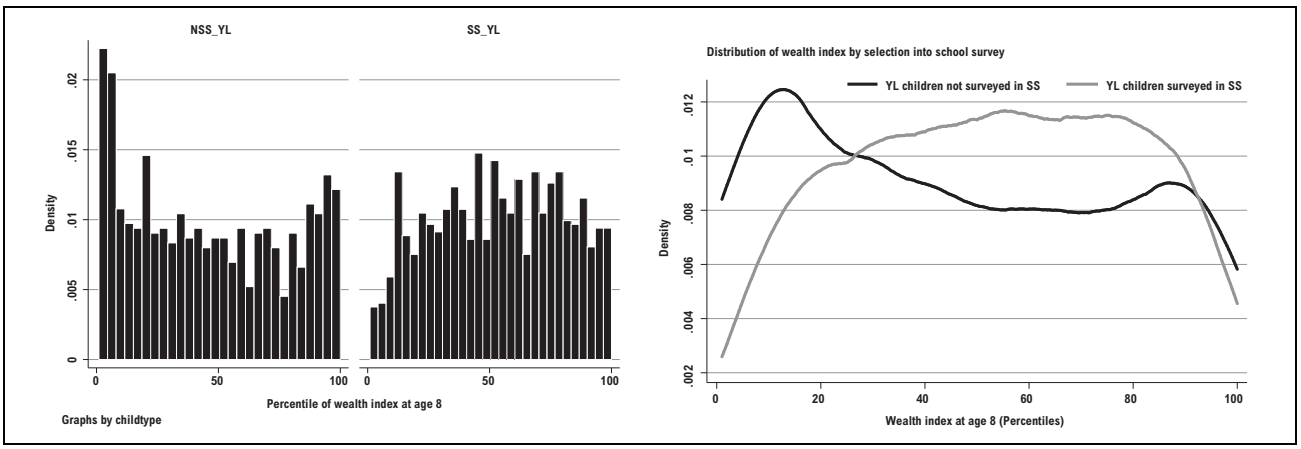
Table A3. *Child test scores and teacher ratings of achievement, by site*

Site ID	Province	Mean Maths T1	Mean Maths T2	Mean Maths gain	Mean Viet T1	Mean Viet T2	Mean Viet gain	Teacher-rated ability (1–5)	Teacher-rated moti-vation (1–5)	Teacher-rated partici-pation (1–5)	Teacher-rated home support (1-5)
1	Phu Yen	557.01	569.66	12.64	547.51	536.34	-11.17	3.49	3.58	3.71	3.3
2	Phu Yen	562.47	574.08	13.14	566.76	573.24	6.07	3.56	3.57	3.62	3.5
3	Phu Yen	392.17	436.99	44.81	457.94	477.82	18.93	3.28	3.47	3.5	3.24
4	Phu Yen	477.31	535.12	58.49	485.5	497.8	13.23	3.29	3.39	3.51	3.16
5	Ben Tre	457.93	496.07	37.49	477.89	426.72	-51.18	3.8	3.79	3.87	3.8
6	Ben Tre	472.93	536.79	63.66	461.29	500.27	35.36	3.47	3.68	3.71	3.43
7	Ben Tre	469.58	468.96	-0.39	479.08	470.38	-8.87	3.66	3.69	3.66	3.7
8	Ben Tre	492.89	554.93	62.97	503.99	498.07	-7.38	3.72	3.72	3.98	3.69
9	Lao Cai	353.93	460.81	106.19	361.66	438.32	75.89	3.02	3.13	3.41	1.54
10	Lao Cai	487.56	564.43	76.41	465.74	521.73	55.25	3.54	3.61	4.21	3.32
11	Lao Cai	486.13	513.76	26.63	482.94	483.13	-0.39	3.47	3.6	3.73	3.63
12	Lao Cai	488.61	538.97	48.22	471.08	531.45	59.59	3.36	3.52	3.76	3.07
13	Hung Yen	514.51	577.06	61.37	505.07	506.9	1.66	3.72	3.7	3.79	3.82
14	Hung Yen	526.32	575.64	47.95	491.22	532.02	39.72	3.36	3.39	3.84	3.31
15	Hung Yen	499.75	521.04	20.72	483.79	501.62	18.42	3.45	3.42	3.67	3.48
16	Hung Yen	480.9	512.72	32.67	474.65	500.86	25.92	3.62	3.69	3.92	3.21
17	Da Nang	561.52	618.73	58.48	569.46	575.42	6.62	3.86	4.11	4.24	4.11
18	Da Nang	583.91	621.9	37.6	574.03	598.09	24.16	3.61	3.78	3.77	3.7
19	Da Nang	469.34	495.19	25.3	477.08	487.09	9.32	3.19	3.32	3.47	3.35
20	Da Nang	537.22	552.27	15.29	527.99	532.41	5.4	3.51	3.64	3.76	3.45
Total		**500**	**540.06**	**39.85**	**500**	**513.93**	**13.62**	**3.51**	**3.6**	**3.76**	**3.45**

Appendix B: Comparison of the Young Lives household and school survey samples

Among the Young Lives Younger Cohort sample (born in 2001–02), 1,138 children (57 per cent) were included in the school survey sample. The sampling frame means that those children who were not studying in Grade 5 in the selected sites in 2011–12 (including those who had migrated) are not included. It is useful to examine how the characteristics of the school sample differ from those of the household survey. Firstly, children not studying in Grade 5 may be less advantaged members of the Younger Cohort as a whole, where they are not enrolled at all, or where they attend school in a lower grade than Grade 5 due to later enrolment or to repetition. Secondly, the household sample also includes a number of more advantaged pupils, typically studying in higher grades than Grade 5, who are not included in the school survey.[25] Figure B1 illustrates the differences. On balance, we find that the school survey sample is slightly more advantaged overall in terms of household wealth.

Figure B1. *Distribution of wealth, by inclusion in the school survey sample*



NSS_YL: not included in school survey sample. SS_YL: included in school survey sample.

Linked to this pattern of selection into the school survey, we also find that children included in the survey tended to have slightly higher than average cognitive scores, as measured in the household tests at age 8, especially in mathematics, as shown in Figure B2 for both mathematics and receptive vocabulary.

[25] Delayed entry provides the reason for non-inclusion in the school survey for 25 per cent of the poorest 20 per cent, and earlier entry provides the reason for 46 per cent of the least poor 20 per cent.

Figure B2. *Distribution of cognitive achievement at age 8, by survey sample*

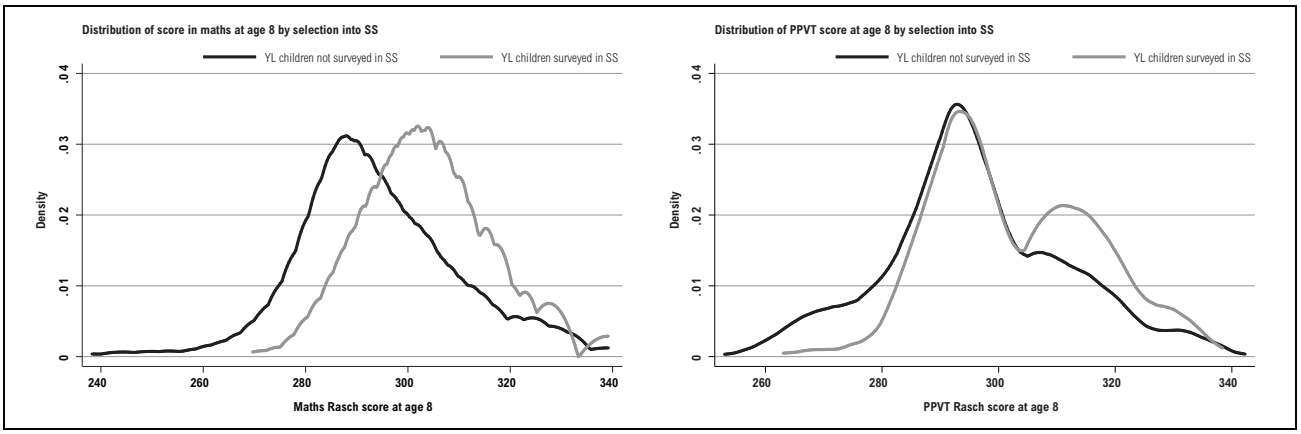


Table B1 compares the socio-economic backgrounds of pupils included and not included in the school survey. There are relatively small, but statistically significant, differences between the two groups in terms of their levels of cognitive skills at age 8, when compared for household wealth, ethnicity and parental education. However, the school survey sample also includes the class peers of the Young Lives index children, who are not included in the household-survey sample. Table B2 compares the index children with the peers. In terms of mathematics and Vietnamese scores, the index children's average scores are slightly lower (but with no significant difference) on the first test, while the gap (favouring the peers) is statistically significant on both tests at the end of the school year, but there is no significant difference in the change in scores (the 'gain'). Nonetheless, the index children are found to come from slightly more advantaged home backgrounds than their peers, as compared on the home background index; the reasons include the fact that the index children are less likely to be ethnic minorities as opposed to Kinh.

Table B1. *Average cognitive achievement at age 8 for household- and school survey samples, by home background status*

	HH survey only	Both surveys	Difference	Sig	HH survey only	Both surveys	Difference	Sig
	PPVT at age 8				maths test at age 8			
Parent's education								
Primary or lower	286.2	296.4	10.2	***	286.8	297.5	10.8	***
Lower secondary (LS)	298.9	302.6	3.7	***	294.1	303.8	9.7	***
Higher than LS	305.1	308.7	3.6	**	302.5	309.6	7.1	***
Ethnicity								
Kinh	299.4	303.5	4.1	***	296.6	304.8	8.3	***
Ethnic minority	283.3	294.9	11.6	***	283.8	292.9	9.1	***
Wealth quintile								
Q1	284.9	296.1	11.2	***	283.4	297.7	14.3	***
Q2	294.9	298.9	4	**	293.5	299.9	6.4	***
Q3	298.1	302.1	4	**	293.2	302.3	9.1	***
Q4	301.5	306.1	4.6	**	299.4	306	6.6	***
Q5	306.1	308.6	2.5	NS	304.3	311.7	7.4	***

* t-test significant at 10% , ** at 5%, *** at 1%

Table B2. *Average test scores and home backgrounds for index children and peers in the school survey sample*

	YL index children	Peers	Difference	Sig
Maths Test 1	499.49	500.27	0.78	-
Maths Test 2	536.59	541.91	3.19	**
Gain in maths score	37.31	41.21	3.91	-
Vietnamese Test 1	497.92	501.10	5.32	-
Vietnamese Test 2	509.34	516.38	7.04	**
Gain in Vietnamese score	11.32	14.84	3.53	-
Home background (index score)	0.02	-0.11	-0.13	***
Ethnic minority (proportion)	0.09	0.14	0.06	***

* t-test significant at 10% , ** at 5%, *** at 1%

Appendix C: Young Lives study site descriptions

Province	Cluster ID	Reference in text	Description of site
Phu Yen	1	PY-1	An inland flood-prone rural community in the south central coast, with a high rate of poverty in 2002 but now less poor.
Phu Yen	2	PY-2	A coastal community with an average rate of poverty.
Phu Yen	3	PY-3	A very poor mountainous community in the south central coast, with mostly ethnic minority groups.
Phu Yen	4	PY-4	A relatively prosperous coastal community with shrimp farming.
Ben Tre	5	BT-5	A poor flood-prone coastal area in the Mekong Delta, with difficult transportation.
Ben Tre	6	BT-6	An inland area on the Mekong Delta with a slightly above-average poverty rate.
Ben Tre	7	BT-7	An inland flood-prone area in the Mekong Delta, with difficult transportation but a relatively low poverty rate.
Ben Tre	8	BT-8	An inland, relatively prosperous area with good transportation in the Mekong Delta.
Lao Cai	9	LC-9	Among the poorest mountainous communities with mostly ethnic minority groups, very difficult transportation and little infrastructure.
Lao Cai	10	LC-10	A very poor mountainous area with mostly ethnic minority groups and underdeveloped infrastructure.
Lao Cai	11	LC-11	A poor mountainous area with mixed ethnic groups.
Lao Cai	12	LC-12	A very poor mountainous area with mixed ethnic groups and underdeveloped infrastructure.
Hung Yen	13	HY-13	A prosperous rural area in the Red River Delta, with a high population density and good infrastructure.
Hung Yen	14	HY-14	A poor rural area in the Red River Delta, near a major city and with good infrastructure.
Hung Yen	15	HY-15	A rural rice-producing community in the Red River Delta, with good infrastructure.
Hung Yen	16	HY-16	A poor rural area in the Red River Delta, with a high population density and good transport infrastructure.
Da Nang	17	DN-17	An urban neighbourhood, with mostly blue-collar labour and average infrastructure.
Da Nang	18	DN-18	A mostly prosperous urban area with very good access to services.
Da Nang	19	DN-19	A relatively poor suburb, with quite poor environmental conditions and transportation.
Da Nang	20	DN-20	A newly developed urban and fishing community, with average infrastructure and poor environmental conditions.

Making Progress: Report of the Young Lives School Survey in Vietnam

In recent years Vietnam has achieved high levels of enrolment in basic education and undertaken important reforms intended to improve school quality. To understand home background and school-level influences on pupil achievement and progress and on the effectiveness of schools, classes and teachers, Young Lives conducted a survey of 3,284 Grade 5 pupils in 20 sites across the country in 2011-12.

Our findings show that most pupils are in the age-appropriate school grade, that pupil and teacher attendance is high, and that the majority of schools, classes and pupils have access to key basic facilities, resources and materials. And while it is not possible to make robust international comparisons, most pupils show mastery of basic skills in numeracy and reading comprehension. In maths in particular, learning levels for many pupils are high.

Attainment in Vietnamese reading and in mathematics is notably lower in disadvantaged areas such as rural Lao Cai when compared to urban Da Nang and among ethnic minorities when compared to Kinh, yet learning progress in Grade 5 among disadvantaged pupils and in disadvantaged areas is not notably lower.

Nor is there strong evidence that more advantaged pupils benefit from substantially more effective schooling during Grade 5, although their schools, classes and teachers are found to be slightly better equipped. Advantaged pupils also often receive longer hours of instruction ('full-day schooling') and attend more 'extra classes'.

Finally, there is considerable variation in the 'value-added' to pupils' learning between schools in the sample. However, although the least effective schools are found to have fewer facilities and resources than the most effective, some of the most effective schools are found to serve relatively disadvantaged pupils.

Young Lives
An International Study of Childhood Poverty

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About Young Lives

Young Lives is an international study of childhood poverty, involving 12,000 children in 4 countries over 15 years. It is led by a team in the Department of International Development at the University of Oxford in association with research and policy partners in the 4 study countries: Ethiopia, India, Peru and Vietnam.

Through researching different aspects of children's lives, we seek to improve policies and programmes for children.

Young Lives Partners

Young Lives is coordinated by a small team based at the University of Oxford, led by Professor Jo Boyden.

- *Ethiopian Development Research Institute, Ethiopia*
- *Centre for Economic and Social Sciences, Andhra Pradesh, India*
- *Sri Padmavathi Mahila Visvavidyalayam (Women's University), Andhra Pradesh, India*
- *Grupo de Análisis para el Desarollo (Group for the Analysis of Development), Peru*
- *Instituto de Investigación Nutricional (Institute for Nutrition Research), Peru*
- *Center for Analysis and Forecasting, Vietnamese Academy of Social Sciences, Vietnam*
- *General Statistics Office, Vietnam*
- *Child and Youth Studies Group (CREET), The Open University, UK*
- *Oxford Department of International Development (ODID), University of Oxford, UK*
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