Chapter 2: Primary Education in India

Evidence and Practice

Ashok Kotwal, Bharat Ramaswami, and Wilima Wadhwa

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In the last two and a half decades, India has been one of the fastest growing economies in the world. The opening up of the economy after the 1991 reforms enabled businesses to take advantage of the growing global demand for high-tech services; to a large extent, Indian economic growth has been led by the service sector. Exports of highly skill-intensive services have sustained the trade balance since the opening up of the economy. With demand for skilled workers growing, a potential talent crunch could stall the growth process. A shortage of skilled workers might lead to a drop in exports, which would adversely affect India's current account balances, possibly inducing the country to violate WTO agreements and pursue more protectionist policies. Therefore, investment in quality human capital becomes imperative.

The *Right of Children to Free and Compulsory Education Act*, also known as the *Right to Education Act* (RTE), came into effect in 2010 and guarantees enrolment to all children between six and fourteen years old; however, it says nothing about what we expect children to learn in schools. In fact, all the evidence on learning outcomes indicates that children are far below grade competency.

At the same time, there are great hopes that the economy will reap the so-called demographic dividend. The proportion of the Indian population in the age group of 15–59 has been rising steadily, from 53.3 percent in 1961 to 57.8 percent in 2001. Projections for the next thirty years put the working-age population at almost 65 percent of the total population by 2040 (Aiyar and Mody 2011). The United Nations (2009) estimates that in the next thirty years India will gain about 300 million workers, making it the largest contributor to the global workforce. This population bulge can translate into growth through two channels. First, since young workers produce more than they consume, this can lead to generation of savings and accumulation of physical capital. Second, as human capital accumulates, the supply of skilled workers rises, leading to innovation and technical progress, which further spur growth. However, for the demographic dividend to actually bear fruit, two conditions must be met: (1) the additional labour force is productively employed; and (2) the quality of the labour force is such that it can be productively employed. Both supply and demand have to be in sync to unleash the benefits of the demographic dividend.

On the demand side, while India has been one of the fastest growing economies in the world, this growth has not created high-productivity jobs for the population at large. As Kotwal, Ramaswami, and Wadhwa (2011) conclude, "there are two India's: one of educated managers and engineers who have been able to take advantage of the opportunities made available through globalization and the other, a huge mass of undereducated people who are making a living in low-productivity jobs in the informal sector, the largest of which is still agriculture."[1]

On the supply side, India is close to the goal of universalizing education. Over 96 percent of children in the age group of 6–14 are enrolled in school.[2] In addition, the *Right to Education Act,* introduced in 2010, will ensure 100 percent enrolment, improved infrastructure in schools, and reasonable pupil-teacher ratios. While government spending on education remains far less than the suggested 6 percent of GDP, the government has been steadily increasing its spending on primary education under its flagship primary education program, Sarva Shiksha Abhiyan (SSA). In 2007, a similar program for the universalization of secondary education, Rashtriya Madhyamik Shiksha Abhiyan (RMSA), was also launched. Both SSA and RMSA focus primarily on providing school inputs and improving access.

To reap the demographic dividend, we need a well-trained and productive labour force, which raises a few questions: How do we measure the quality of the labour force? Do years of schooling adequately capture this quality? Does enrolment translate into learning? While it is important to build skills at all levels, unless the basic foundations of primary education are built for all, additional human capital accumulation is going to be constrained. Therefore, while improving the state of our educational system may not be sufficient for reaping the demographic dividend, it is a necessary first step, particularly since the available evidence on learning outcomes indicates that India is far away from the goal of guaranteeing education for all children.

We review this evidence from two major sources: Pratham's Annual Status of Education Report (ASER) surveys (2005–14) and the Inside Primary Schools study. We then present some of the interventions this evidence has prompted and discuss how successful they have been in improving learning outcomes. Finally, we provide some recommendations for the RTE.

The *Right to Education Act* (RTE)

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[1] See Kotwal, Ramaswami, and Wadhwa 2011 and Eswaran et al. 2009 for a more detailed discussion of India's growth process.

[2] The government of India reported a net enrollment ratio (NER) of 98.3 percent for 2009–10. According to ASER 2011, 96.7 percent of all children in the 6–14-year age group were enrolled in school.

The focus of the RTE is to ensure that

> "every child of the age six to fourteen years shall have a right to free and compulsory education in a neighbourhood school till completion of elementary education.
>
> No child shall be liable to pay any kind of fee or charges or expenses which may prevent him or her from pursuing and completing the elementary education.
>
> Where a child above six years of age has not been admitted in any school or though admitted, could not complete his or her elementary education, then, he or she shall be admitted in a class appropriate to his or her age.[3]"

With enrolment levels already as high as 95 percent in most states, the RTE in its current form really addresses the "last mile" problem of enrolling the remaining out-of- school children. The RTE also gives detailed norms for availability of schools and teachers, pupil-teacher ratio (PTR), and infrastructure in schools.

The following are some of the main norms in the RTE with which all schools have to comply:

- Access
  - Appropriate government/local authorities shall establish, within such areas or limits of neighborhood as may be prescribed, a school, where it is not so established, within three years from the commencement of the Act
    - For children in classes I–V,[4] a school shall be established within a walking distance of one kilometre of the neighbourhood
    - For children in classes VI–VIII, a school shall be established within a walking distance of three kilometres of the neighbourhood
- School infrastructure[5]
  - At least one classroom per teacher
  - Office cum-store-cum-head teacher's room
  - Barrier free access
  - Separate toilets for girls and boys
  - Safe and adequate drinking water facility for all children

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[3] *The Gazette of India, Extraordinary,* pt. 2, sec. 1, 27 August 2009.

[4] Classes I–V is the terminology used in India for Grades 1–5. Similarly, Classes VI–VIII mean Grades 6–8.

[5] Proponents of "low-cost" private schools feel that it imposes an unnecessary burden, in terms of infrastructure norms, on these schools.

- A kitchen where the mid-day meal is cooked in the school
- A playground
- Arrangements for securing the school building with a wall or fence

- Teacher Learning Material (TLM)
  - There shall be a library in each school providing newspapers, magazines, and books on all subjects, including story books
  - Play material, games, and sports equipment shall be provided to each class as required
- Teachers
  - Maintain regularity and punctuality in attending school
  - Complete entire curriculum within the specified period of time
  - Assess the learning ability of each child and accordingly supplement additional instructions
  - Hold regular meetings with parents and guardians
- Pupil Teacher Ratio (PTR) in school
  - Up to 60 children for 2 teachers
  - 61–90 children for 3 teachers
  - 91–120 children for 4 teachers
  - 121–200 children for 5 teachers
  - >150 children for 5 teachers + 1 head teacher
  - >200 children for 5 teachers + 1 head teacher
  - PTR excluding head teacher shall not exceed 40[6]
- Learning & evaluation
  - Building up the child’s knowledge, potential, and talent
  - Medium of instruction shall, as far as practicable, be in the child’s mother tongue
  - No child admitted in a school shall be held back in any class or expelled from school until the completion of elementary education

While the RTE specifies clear norms for enrolment, access, school infrastructure, teacher appointment, teacher learning materials, and pupil-teacher ratio, it is not that clear in the area of children’s learning achievement. Ambiguous phrases like “building up child’s knowledge, potential, and talent” and “development of physical and mental abilities to the fullest extent” are

[6] As can be seen, there is an overlap in the ranges specified in the act between “>150” and “>200.” These ranges are generally interpreted as minimum requirements.

used. In many ways, the RTE's norms continue to build on the government's focus on inputs rather than outcomes. This is not to say that inputs are not important – without inputs we cannot have outcomes. However, as far as the educational sector is concerned, the inputs are by and large in place. It is time to shift the focus to outcomes. If the RTE is to be true to its spirit of providing an education to all children, then it has to go beyond simple input norms. It has to specify what the expected outcome of the education process is – that is, what we expect a child to be able to do at the end of five years of schooling. This translation of inputs into outcomes is often taken for granted. The thinking has been that if enough schools are built, teachers appointed, and curriculums framed, then learning will automatically take place. However, unless children and teachers attend school and instruction takes place, learning, however defined, will not take place, no matter how many classrooms, toilets, and playgrounds are built.

Evidence on Learning Outcomes: 2005–14 Annual Status of Education Report

This section uses primary data collected in the Annual Status of Education Report (ASER), the largest annual data collection effort with children in rural India. Since 2005, when it was first introduced, the report has presented annual estimates of enrolment and basic reading and arithmetic learning outcomes for every district in rural India. ASER completed ten years in 2014.

ASER uses a two-stage sample design. In the first stage, 30 villages are selected from each district from the 2001 census village listing using probability proportion to size (PPS). In the second stage, 20 households are sampled randomly in each of the selected villages. All children in the age group of 3–16 in the selected households are surveyed, and children in the age group of 5–16 are tested. This gives a sample size of 600 households and approximately 900–1,200 children per district. At the national level, ASER visits about 16,000 villages, 300,000 households, and 700,000 children each year.

Every year, the core set of questions in ASER regarding schooling status and basic learning levels remains the same; however, a set of new questions are added in order to explore different dimensions of schooling and learning in the elementary stage. In 2006 and 2007, ASER tested reading comprehension for different kinds of readers. ASER 2007 introduced testing in English and asked questions on paid tuition; ASER 2008 had questions on telling time and oral math problems using currency, and incorporated questions on village infrastructure and household assets. Investigators were asked to record whether the village visited had a tarred road leading to it and whether it had a bank, ration shop, and so on. In the sampled households, information on assets (type of house, telephone, television, and so on) was also recorded.

Recent ASERs have brought together elements from previous ASERs. English testing was repeated in 2009, 2012, and 2014; questions on paid tuition and household and village characteristics have been retained since 2009. While some of the information available in ASER, such as enrolment, is available from other sources, it remains the only annual exercise in the public domain to provide data on learning outcomes, which makes it a valuable policy tool.

The instruments used for the ASER survey test language and math skills of children in the age group of 5–16 years. The tools have been extensively used and piloted and provide good estimates for learning levels at the state and district levels (Ramaswami and Wadhwa 2010). Each test takes about five minutes to administer and is done on a one-on-one basis. There are five levels in each of the ASER tests of language and math: the highest level in the language test is reading at the Grade 2 level, while the highest level in math is being able to do a simple division problem, which in most states, is part of the curriculum for Grade 4 or earlier.[7]

ASER tests are floor-level tests in the sense of testing minimum learning standards; the same tests are administered to all children, regardless of which class they are enrolled in. Once a child is at the highest level, the tests do not tell us what else the child is capable of. Thus, although they are useful for evaluating early reading and math abilities and are able to capture changes in these parameters, they do not capture the full spectrum of variation or progress within each of the competency levels (Vagh 2009).

The availability of ASER data enables us to track trends over time. The ASER tests are designed for children in Grades 1–5. As children in Grades 1 and 2 are too young for testing to be reliable, we examine the learning outcomes for Grades 3 and 5. Three clear trends emerge from ten years of ASER data.

Learning Levels Are Low and Remain Low over Time

In 2005, about half the children enrolled in Grade 5 were unable to read a Grade 2–level text. This number was virtually unchanged in 2014. If anything, there are some signs of decline in basic learning levels since 2010 (Table 2.1). In other words, about half of all children are completing the primary stage of schooling without basic skills like reading. These findings have serious implications for what children will be able to do when they are in upper primary and secondary school. For instance, in 2014, even in Grade 8, close to 25 percent of children were unable to read a Grade 2–level text. The arithmetic numbers are even more worrying (Table 2.2).

Table 2.1. Percentage of children who can read Grade 2–level text

Year	Grade 3	Grade 4	Grade 5
2006	20.02	37.65	53.06
2008	22.34	41.01	56.27

[7] For more information on ASER tools and processes, see http://www.asercentre.org.

2010	19.58	37.92	53.69
2012	21.8	34.72	46.86
2014	23.62	37.28	48.03

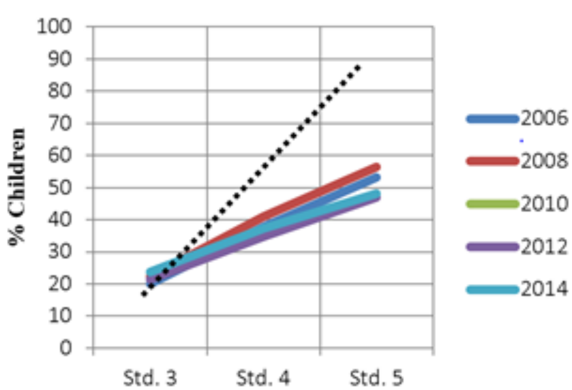
Table 2.2. Percentage of children who can do at least subtraction, by grade

Year	Grade 3	Grade 4	Grade 5
2008	38.94	57.38	69.91
2010	36.34	57.65	70.91
2012	26.38	42.33	53.64
2014	25.36	40.25	50.55

Learning Trajectories Are Flat over Time

Children do learn as they proceed to higher grades, but these learning trajectories are relatively flat over time, as is clear from Figure 2.1. For example, if one of the goals of the school system is to ensure that all children can read a simple text fluently by the time they finish Grade 5, then the learning curve over time needs to be much steeper (as shown by the dotted line). Pritchett and Beatty (2012) have a similar finding. This implies that if a child does not learn some of the basic skills in early years, it is unlikely that he or she will learn them later. Thus, learning delayed is learning denied. This is an issue of concern because it implies that, for the majority of children, each year in school does not lead to much "value added."

Figure 2.1. Percentage of children who can read a Grade 2–level text



Each Successive Cohort Does Worse than the Previous Cohort

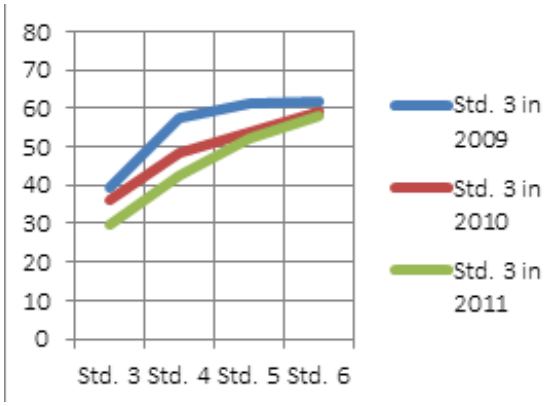
Ideally, to measure change in learning outcomes, the same children would be tracked over time. While ASER does not track the same children each year, data from successive years can be used to create artificial cohorts in order to see how successive cohorts are faring as they move through the system. For example, a cohort that was in Grade 3 in 2009 would be in Grade 4 in 2010, and Grade 6 in 2012. The next cohort would be in Grade 3 in 2010 and Grade 6 in 2013, and so on. Table 2.3 presents learning outcomes in arithmetic of three such cohorts over time. Of the first cohort – those who were Grade 3 in 2009 – 39.1 percent could do subtraction, compared with 36.4 percent of the next cohort, which was in Grade 3 in 2010. Of the children who entered Grade 3 in 2011, about 30 percent could do the same kind of subtraction problem.

Two trends emerge from the data in Table 2.3, where each column can be interpreted as a learning trajectory for a particular cohort of students. First, learning trajectories are flat even when cohorts are tracked over time. Second, and more important, learning outcomes of each successive cohort are a little worse compared with the previous cohort. For instance, by the time the 2009 Grade 3 cohort reached Grade 6 in 2012, 61.7 percent could do subtraction. In contrast, 59.1 percent of the next cohort, which started Grade 3 in 2010, could do subtraction by the time they reached Grade 6 in 2013, and 58.1 percent of the following cohort, which started Grade 3 in 2011. In other words, the learning trajectories of successive cohorts lie below those of previous cohorts (Figure 2.2). What this means is that each additional year of schooling adds less value for successive cohorts.

Table 2.3. Percentage of children who can do at least subtraction

	Year that cohort started Grade 3		
Class	**2009**	**2010**	**2011**
Grade 3	39.09	36.38	29.99
Grade 4	57.68	48.52	42.33
Grade 5	61.20	53.65	52.34
Grade 6	61.68	59.11	58.14

Figure 2.2. Cohorts over time, Grade 3 to Grade 6: percentage of children who can do subtraction



The analysis presented here includes children enrolled in both government and private schools. A similar analysis of government schools only shows that learning levels are lower compared with private schools. However, two things need to be kept in mind while comparing learning outcomes between these school systems. First, it is well known that the demographic characteristics of private school children can be quite different from those of government school children – these need to be controlled when comparing learning outcomes. Second, even children in private schools are far from grade-level competency.[8]

Inside Primary Schools

ASER is a large, nationally representative survey of learning that gives reliable estimates of learning levels at a point in time. Since its tools are comparable, it can also be used to study changes in learning outcomes over time. However, given its rapid-assessment nature, it is not designed to answer such questions as "Why are learning levels so low?" or "What can we do to improve learning outcomes?" For that, a much more detailed dataset, with information on child, household, classroom, and school characteristics, is needed.

This section is based on a study titled "Inside Primary Schools," done in 2009–11. The study tracked 30,000 children in Grades 2 and 4 across five states (Andhra Pradesh, Assam, Himachal Pradesh, Jharkhand, and Rajasthan) over fifteen months. Learning outcomes in mathematics and language skills were measured by giving a baseline test at the beginning of the year and an end-line test near the end of the period. The sample was restricted to government primary schools and students only. Within each state, three districts were selected on the basis of geographical location and socio-economic indicators. In each district, sixty government schools with primary sections were sampled, and up to 25 students each from Grade 2 and Grade 4 were then randomly sampled from the enrolment registers of each of these schools.

[8] See Wadhwa 2009 and 2014.

The study also consisted of one student household visit and three school visits in order to observe classroom activity, classroom environment, and teaching styles (e.g., using local examples). Furthermore, teachers were administered an assessment that they agreed to take anonymously. In summary, the sample was drawn from fifteen districts located in five states, consisting of 900 schools and nearly 30,000 students; however, teacher characteristics and competency data can be analyzed only at the school level.

Learning outcomes could depend on the characteristics of children (e.g., age, gender, whether they were receiving outside tuition); households (e.g., parental interest, wealth status, caste, mother's education, dependency ratio, the number of literate adults in the family); classroom experience (e.g., availability and quality of classroom supplies, teacher competency, attitude, style); and schools (e.g., physical assets, basic facilities, teacher education, provision for mid-day meals). The survey collected data on all these variables so that we could see which ones would be significant in explaining the variation in the learning outcomes across the sample. In addition to the direct measurement of the learning outcomes, there were some other distinctive features of this dataset. Teacher competency was calculated by giving teachers a test that required no more knowledge than what they taught in Grade 4. Teacher attitude and classroom behaviour were recorded through direct observation made on random visits to the classroom.

Though our methodology does not allow us to establish causality, we can ascertain that some factors would indeed play a role in determining the learning outcomes, while other factors emphasized by the RTE, such as physical school assets and teacher educational qualification, do not seem to matter. Some of these factors (e.g., household characteristics) are outside the control of educational policy; however, among the factors that can be influenced, a prominent one is teacher competence, as revealed by the test scores on elementary-level material as opposed to qualifications in terms of degree certificates.

It also matters what teachers do in the class – whether they have a friendly attitude and whether they are spending their time teaching rather than performing non-teaching activities. Student attendance matters, but that, in turn, seems to be affected significantly by the teacher's attitude: the friendlier the teacher, the higher the attendance. It is unfortunate for policymakers that the learning outcomes seem to depend much more on qualities that are more difficult to measure.

Descriptive Statistics

Before presenting the results of the regression analysis that links characteristics of children, households, classrooms, teachers, and schools to learning outcomes, we present some descriptive statistics from the dataset in Table 2.4.[9] As the table shows, there is a lot of variation by state.

Attendance was measured in three ways: from the attendance registers on the day of the survey; from the attendance registers for one day previous to the day of the survey; and by taking an actual head count on the day of the survey. For each sampled school, this was done on all three visits during the survey period. We found that attendance by register on the previous day was always greater than the attendance on the day of the survey.[10] This could be because schools inflate attendance in retrospect in order to get higher attendance-based entitlements such as supplies for the mid-day meal program. The more reliable measure of attendance, therefore, is that based on actual head count.

For our analysis, we aggregate the information for the three visits by dividing children into two groups: those present in school on all three visits versus those who were not. This is the measure we present in Table 2.4. The highest attendance was observed in Himachal Pradesh, where 79 percent of the children were present in school on all three visits. This was closely followed by Andhra Pradesh at 75 percent and Rajasthan with 60 percent. Finally, in Jharkhand, attendance was the lowest at an appalling 31 percent.

Children were assessed in language and math in the first visit (baseline) and the last visit of the study (end-line). Given the evidence from ASER that children are far behind grade competency, the tools of the study were designed so that all the questions covered material that the curriculum would have addressed in earlier grades. The math score ranged from 0 to 21 and the language score was in the range 0–16. The highest math scores were in Andhra Pradesh, as was the largest improvement. The lowest math scores were in Rajasthan; however, by the end-line visit, the state could improve scores by about 15 percent. In contrast, although Jharkhand had higher scores to start with, students there actually showed a learning loss by the end-line. This could be due to the particularly low attendance rates in Jharkhand. The results for language are qualitatively similar; however, the average score was only about 50 percent even in the highest-scoring state.

Table 2.4. Mean attendance and scores for Grade 4

[9] We dropped Assam from our sample because of missing observations in many of the variables, such as caste, that we wanted to control for. Also, we present results for Grade 4 only in this section. We could not get any robust results for Grade 2.

[10] The School Tells study also has a similar finding.

Variable	Himachal Pradesh Obs.	Himachal Pradesh Mean	Rajasthan Obs.	Rajasthan Mean	Jharkhand Obs.	Jharkhand Mean	Andhra Pradesh Obs.	Andhra Pradesh Mean
Attendance	1,853	0.79	1,897	0.60	2,387	0.31	1,798	0.75
Baseline math score	2,144	9.73	2,168	7.67	2,558	9.00	1,950	11.92
End-line math score	2,144	11.52	2,168	8.84	2,558	8.42	1,950	14.30
Improvement (%)	2,144	18.43	2,168	15.19	2,558	-6.41	1,950	19.96
Baseline language score	2,144	5.51	2,168	4.65	2,558	4.98	1,950	6.64
End-line language score	2,144	6.77	2,168	5.20	2,558	4.37	1,950	8.70
Improvement (%)	2,144	22.94	2,168	11.74	2,558	-12.38	1,950	31.08

What could explain such large differences across states? Clearly attendance matters, but attendance itself is endogenous to learning outcomes. Table 2.5 displays the data on household characteristics for the Grade 4 children. The table suggests that the only variable in which Jharkhand is noticeably deficient is household assets – it is the poorest of the four states. Judging from the number of literate adults in the household and the dependency ratio, Andhra Pradesh has the smallest size of households. Surprisingly, Andhra Pradesh has the same level of mother's education as Jharkhand, while Rajasthan has the least. In terms of other household variables, Jharkhand does not seem especially handicapped. Similarly, Andhra Pradesh's learning performance is not easily explainable in terms of household characteristics; that is, Andhra Pradesh does not demonstrate particularly exceptional characteristics.

So, is it the case that classrooms and schools are very different across these states? Table 2.6 presents the observed characteristics in classrooms and schools. Jharkhand is an inferior outlier in almost every aspect. The low attendance in Jharkhand could be explained by all other factors related to schools and teachers; however, it is still not the case that Andhra Pradesh is superior in this regard. For instance, it has hardly any teachers with professional education degrees, teachers do not exhibit exceptional performance in the assessments, and school and classroom infrastructure is not very different from other states. However, in terms of the teacher's activities in the classroom, it is way ahead of the other states. This seems to suggest that traditional variables like qualifications and school infrastructure matter less for learning outcomes than how the teacher engages children in the classroom.

Table 2.5. Household characteristics of Grade 4 children

Variable	Himchal Pradesh Obs.	Himchal Pradesh Mean	Rajasthan Obs.	Rajasthan Mean	Jharkhand Obs.	Jharkhand Mean	Andhra Pradesh Obs.	Andhra Pradesh Mean
Assets[1]	1,757	2.29	1,363	2.15	1,799	1.66	1,598	2.70
Mother's education[2]	1,407	0.32	1,466	0.03	1,756	0.12	1,418	0.12

No. of literate adults in household	1,478	1.76	1,546	1.19	1,860	1.55	1,498	0.90
Parental interest[3]	2,098	3.70	1,998	3.01	2,370	3.85	1,751	3.50
Commute time (minutes)	2,014	23.28	1,920	17.85	2,306	12.73	1,703	8.86
Dependency ratio[4]	1,290	0.52	1,190	0.51	1,532	0.54	1,364	0.16

Notes:

1 Sum of seven assets observed in the home: TV, radio, phone, fridge, fan, cycle, and tractor.

2 Proportion that are literate.

3 Parental interest ranges from 0 to 15 based on the sum of the following variables: household reading materials (0–6); child reading materials (0–5); whether parents had made a complaint or talked about school problems (0–1); whether they had visited the school (0–1); whether they knew about the VEC (0–1); and whether the child received any help from a parent, sibling, relative, etc. (non-paid help) (0–1).

4 The ratio of non-working adults to total adults in the household.

Table 2.6. School characteristics of Grade 4 children

	Himchal Pradesh		**Rajasthan**		**Jharkhand**		**Andhra Pradesh**	
Variable	**Obs.**	**Mean**	**Obs.**	**Mean**	**Obs.**	**Mean**	**Obs.**	**Mean**
Attendance[1] (students)	1,853	0.79	1,897	0.60	2,387	0.31	1,798	0.75
Attendance[2] (teachers)	180	0.76	177	0.81	179	0.68	180	0.84
Meals[3]	174	0.99	170	0.96	173	0.68	176	0.99
Multi-grade[4]	161	0.65	133	0.79	146	0.95	159	0.71
School physical assets[5]	180	7.26	177	7.15	179	5.01	180	5.76
School learning assets[6]	180	3.18	177	2.60	179	2.07	180	3.78
Classroom assets[7]	174	3.07	167	3.25	168	2.83	171	3.73
Graduate teachers[8]	171	0.44	172	0.70	176	0.57	179	0.78
BEd, MEd[9]	141	0.26	161	0.23	145	0.17	176	0.06
Smiling teachers[10]	163	0.25	166	0.07	168	0.07	171	0.54
Use of local information[11]	166	0.20	166	0.21	168	0.13	169	0.35
Teachers' language score[12]	169	54.76	134	45.25	154	35.18	139	46.88
Teachers' math score[13]	169	72.21	134	66.88	154	60.33	139	67.62

Notes:

1 Proportion of Grade 4 children who were present in all three visits to the schools.

2 Average proportion of teachers who were present in the school in the three visits.

3 Proportion of schools where a meal was observed.

4 Proportion of schools where Grade 4 children were sitting with some other grade.
5 School physical asset is in the range of 0–14 and is the sum of the following seven characteristics that were observed in Visit 1 and Visit 3 in the schools: water was available; it was drinkable; toilet was there; it was usable; separate toilet for girls; it was unlocked; boundary wall.
6 School learning asset is in the range of 0–6 and is the sum of the following three characteristics that were observed in Visit 1 and Visit 3 in the schools: school had a library; children were observed using library books; there was a timetable displayed in the school.
7 Classroom asset is in the range of 0–5 and is the sum of the following five characteristics that were observed in the classrooms: there was a blackboard in the class; this blackboard could be seen from the back of the class; the blackboard was usable; children's work was displayed on the walls; there was teacher learning material in the classroom.
8 Proportion of teachers with a graduate degree.
9 Proportion of teachers with a BEd/MEd degree.
10 Proportion of classrooms observed with teachers smiling and interacting with children.
11 Proportion of classrooms observed with teachers using local information to explain materials.
12 Average percentage teacher score in language assessment.
13 Average percentage teacher score in math assessment.

No consistent story emerged in a separate multivariate regression for each state where we controlled for characteristics of the child, her family, and her school. Once we controlled for baseline scores, none of the other variables were consistently statistically significant to explain the variation within states. While this analysis is not useful in explaining inter-state differences, we hoped that it would help identify important correlates of learning. Though the dataset is very rich in the types of processes and variables it tries to capture, it does have a fair number of missing observations across variables. Since these are scattered across variables, the sample size is significantly reduced in multivariate regressions that control for a lot of variables.

Furthermore, an additional problem of multi-collinearity exists, since a lot of the variables are correlated within schools – usually "good" schools have all indicators that are superior. We estimate a pooled regression, which uses state-fixed effects to control for unobserved state-level variables, such as state education policy,[11] that are not captured in the dataset. The results from the pooled regression of the four states are as follows:

- Baseline scores and attendance are positively correlated with learning outcomes.
- Girls are slightly better in math.
- Supplemental help improves learning outcomes.
  - Tuition and parental interest variable in math

[11] Education is a concurrent state and central subject in India, so there can be significant differences in state education policy.

- o Mother's education in language

- Household asset is positively correlated with learning outcomes.
- School physical infrastructure is not correlated with learning.
- School learning infrastructure is positively correlated with learning.
- Teacher engaged in non-teaching work in the classroom negatively affects learning outcomes (this is the only classroom activity that seems to be important).
- Teacher attendance does not matter.
- Teacher qualifications and competency matters only for math.

Most of the results were as expected, but there were some that are particularly interesting. In our sample of fourth graders, girls have slightly higher math scores, even after controlling for other variables. This finding goes contrary to popular wisdom, but can be explained. We have only government schools in this dataset; ASER and other evidence show that a larger proportion of boys are enrolled in private schools, compared with girls. Rural households will often choose to send their sons to a private school, especially when faced with budgetary constraint. The perception that parents have is that private schools deliver better outcomes, even if it is just in the use of the English language, since it may provide better job prospects. The finding about supplemental help is interesting because it reinforces anecdotal evidence. Math is more difficult than language, so children may need supplemental help that parents cannot provide.

At the school level, whereas inputs related to learning, such as the presence of a library, matter for learning outcomes, physical infrastructure such as toilets does not. Wadhwa (2010) obtained a similar result using ASER data. The fact that the school's physical infrastructure is not correlated with learning outcomes is important, given that the RTE is primarily focused on providing these kinds of inputs.

The study also collected information on a variety of classroom practices. Among these, the only one that was significant was whether the teacher was engaged in non-teaching work. Surprisingly, teacher attendance is not correlated with learning outcomes. Nonetheless, teacher attendance was quite high; in fact, it was higher than that of children, suggesting that the issue of teacher absenteeism is less of a problem than it is made out to be. Similar results for teacher attendance are found in ASER. Finally, while teacher qualifications and competency do not matter for language scores, they do for math scores.

These results represent only average effects, so we also estimated regressions for the top 10 percent and the bottom 10 percent of the class. Given the disparity, in terms of learning levels, age, and other demographic characteristics within Indian classrooms, along with the fact that over 60 percent of classrooms tend to be multi-grade, it is quite possible that some children get ignored in class. The results are as follows:

- Attendance matters only for the bottom 10 percent of learners.
- Compared with boys, girls do worse in language in the bottom 10 percent and better in math in the top 10 percent.
- Supplemental help improves learning outcomes, but far more for the bottom 10 percent.
- Possession of household assets is positively correlated with learning outcomes for the top 10 percent.
- School learning infrastructure matters only for the top 10 percent.
- Teacher attendance matters for the top 10 percent.
- Teacher educational qualifications impact the bottom 10 percent negatively, whereas competency and professional qualifications help.
- Teacher educational qualifications are important for the top 10 percent.

According to these results, different things matter for the top 10 percent of the class compared with the bottom 10 percent. For children in the bottom 10 percent of their class, their attendance and whether they receive supplemental help matters far more than it does for the top 10 percent of the class. There is some evidence that teachers teach to the top of the class; that is, their attendance and educational qualifications matter only for the top achievers in the class.

What Can We Do to Improve Learning?

The evidence clearly indicates that there is a huge learning crisis in India, raising two important questions: What can be done to improve the state of the educational system? What should schools and teachers do to produce better outcomes? Here, it is important to stress a point: the policy prescriptions have to be feasible. Given the size of the country and the fact that it is a poor country, for a solution to work, it has to be scalable and use currently available resources.

Some ideas for what can work come from the field interventions of Pratham, which is the largest primary education NGO in the country, with programs in almost every large state. One feature that differentiates Pratham from other NGOs is that it has always worked with the government within the state educational system to bring about change. Prompted by ASER and even before ASER, Pratham has designed and implemented many learning interventions in rural and urban India. Its largest intervention, Read India, was launched in January 2007 at the release of the ASER 2006 report. Pratham is also one of the most evaluated NGOs in the country. Many randomized control trials (RCT) have been conducted on its interventions; in this section, we discuss the results from some of these studies.

Balsakhi Remedial Tutoring Program (2001–04)

Both ASER and the Inside Primary Schools study show that children are at least two to three grades behind the curriculum. To bridge the gap and, more importantly, to make sure that children do not drop out, children who are getting left behind in class need supplemental help. Usually this help is available from parents at home; however, in the context of rural India or urban low-income areas, this may not be forthcoming because even parents may be illiterate. In fact, according to ASER, 50 percent of children who go to rural public schools have mothers who have never been to school and around 25 percent are first-generation learners. Furthermore, paying for private tutors may not be an option for poor families.

Pratham's Balsakhi program was aimed at providing a tutor – the Balsakhi – in school to help children who had fallen behind. A Balsakhi was usually a young woman recruited from the local community, trained by Pratham, and paid a fraction of the government schoolteacher salary (around US$10–15 per month). She worked with fifteen to twenty children in Grades 2, 3, and 4 for about two hours a day. Instruction was focused on basic reading and numeracy, skills that the children were supposed to have learned in Grades 1 or 2.

The program was evaluated by the Abdul Latif Jameel Poverty Action Lab (J-PAL). The study found that the program showed significant learning gains of 0.14 standard deviations in the first year and 0.28 standard deviations in the second. More importantly, the weakest students, who were the main targets of the program, gained the most. The overall cost of the program was US$2.25 per child per year! Pratham has scaled up this program across the country.

Role of Community Participation: Jaunpur Study (2005–06)

To improve learning levels, it may be necessary to create pressures from both the supply and demand sides. Improvements in schools related to classroom practices or provision of supplemental help are essentially interventions to improve supply. On the demand side, the role of parents is indisputably important as well and has been studied extensively. However, apart from providing help at home, parents can play another important role, especially in the context of low learning outcomes – they can create pressures within the system for better public service delivery since they are the consumers of the services provided by public schools. One way to do this is through community participation in the education process.

In 2001, Uttar Pradesh became one of the first states to establish Village Education Committees (VEC) in every village. These are now mandated by the RTE and all states have them in some form or the other. VECs typically consist of the elected village head, the headmaster of the local school, and three parents nominated by the village community. Their responsibilities include monitoring school performance, claiming public funds, and hiring additional contract teachers when necessary. However, surveys have shown that the "members" of the VEC are often unaware that they are part of the committee, and are thus unaware of their responsibilities and their powers made available by funds, especially for appointing additional contract teachers.

In 2005–06, J-PAL, along with Pratham, conducted an RCT of three cascading interventions in 280 villages of the Jaunpur district of Uttar Pradesh. The aim was to study whether access to more information resulted in VECs and the community demanding better public services, in contrast to the effect of direct interventions on learning outcomes. The first intervention, conducted in 65 villages, involved volunteers having conversations in the village about their state of learning, status of schools, state policies, and funds available for improving education. Villagers were also asked whether they knew about the VEC, its members, and its responsibilities. VEC members also received a pamphlet on their responsibilities. The second intervention, in another 65 villages, had all the features of the first intervention and the community was also trained to test children in basic reading and arithmetic. Volunteers generated a community report card and presented the results at a meeting of the community. The third intervention, once again in 65 villages, added to the first two by teaching volunteers a simple method to help children learn to read in after-school reading classes. The material given to volunteers was designed by Pratham.

In all three sets of treatment villages, there was an increase in VEC members who knew that they could access public funds. Parents were also more likely to know that a VEC existed in their village compared with the control villages. However, this greater awareness did not result in very different performances of the VECs in the treatment and control villages, but more contract teachers were hired in the second-intervention villages. The intervention also did not result in greater engagement of parents with schools; for example, parents did not visit more frequently. Finally, even though only 8 percent of the children in the villages with the teaching intervention attended the classes, there were significant gains in reading ability. These gains were observed for children who were at lowest and middle end of the reading scale. As expected, the gains were much higher among children who attended the reading classes. No reading gains were observed in villages where there was no teaching intervention.

Thus, simply making communities and parents aware that there is a problem may not be enough – children who need supplemental help gain from actual teaching. However, this supplemental help can be provided by the local communities themselves and does not involve a high-cost intervention.

Read India Evaluation (2008 – Present)

The above interventions and evaluations clearly point to the simple fact that when concerted efforts are made to help children who are falling behind, children learn. This seems like a very obvious statement that would not require complicated and extremely expensive RCTs to prove;

however, until the first ASER report came out in 2005, no one in the education establishment was even willing to accept the fact that children who were enrolled in school might not be at grade competency. Fortunately, ASER and other subsequent evidence slowly shifted the focus from enrolment to learning, leading to the acceptance that enrolment does not necessarily translate into learning.

In January 2007, Pratham launched its Read India program in 250 (out of 600) rural districts. The program had various components that had evolved with Pratham's work in different communities across the country. In the initial years (2007–10), Pratham worked large-scale in almost 250 districts across India. In fact, in the summer of 2008, it is said that there was a Pratham summer camp in almost half of all villages in the country. The scale was made possible by mobilizing local volunteers in every village.

By 2010, Pratham decided to scale down so that its impact could be stronger and more sustained. One hundred villages were selected in about 200 blocks across India where Pratham team members, along with local village volunteers, worked for three years. By 2013, the model had begun to deliver "guaranteed results." Even if most of them could not read at first, in 40–50 days' time, Pratham could guarantee that at least 60–70 percent of children between 8 and 12 years old had learned to read and do basic arithmetic. Today, Read India has two distinct models: learning camps and Pratham-government partnership.

Learning Camps: Direct Activity by Pratham in Villages and Schools

Based on Pratham's experience across India in the last few years, "learning camps" have emerged as a promising way to strengthen basic learning levels of children between Grades 3 and 5. Learning camps are short bursts of activities during the school year that are repeated several times a year, each session lasting up to ten days. In preparation for the camp, children are assessed using simple reading and math tools (like the ASER tools) and are grouped according to learning level rather than by grade. During the camp, each child is given a small package of reading materials and each group is taught using corresponding methods and materials.

Teaching-learning activities based on the child's level seems to help the child learn faster compared with the usual organization of schools, where children are grouped by grade and taught using the textbooks and materials of the appropriate grade level. These intensive periods of focused activity help strengthen and build a child's ability to read and do arithmetic. Simple assessment tools are used to track progress across camps and the results are shared with parents, teachers, and the community. Depending on the baseline levels of children's ability to do arithmetic and to read, camps are repeated anywhere between thirty and fifty days during the school year.[12]

A Pratham team member leads the learning camp while local volunteers help run them. An integral part of this strategy is to involve community members in improving children's learning. It is hoped that conducting these camps within the government school during school hours will lead to the adoption of the "demonstration effect" of grouping and of effective teaching-learning practices by the schoolteachers and by the school system so that learning gains can be sustained over time. Pratham team members also rotate through a set of schools and villages to maximize possible outcomes given the time and resources available, thus creating a cost-effective model of learning improvement.

Pratham-Government Partnership for Improving Child Learning

The objective of these partnership programs is to work with schoolteachers and enable them to adopt Pratham methods of grouping, instruction, and teaching-learning practices. By catalyzing the school system, a much larger scale-up and impact is possible than can be done by direct Pratham action.

To start, a cadre of leaders is needed from within the school system; this cadre is often a set of officials called cluster coordinators who are responsible for about twelve to fifteen schools. To become academic leaders who can catalyze the system, they need to be convinced that there was indeed a problem with children's learning, and then "practise" the new teaching method themselves daily for fifteen to twenty days. Pratham trains and orients the cluster coordinators to assess their children and learn how Pratham teaches. After brief training, these cluster coordinators are encouraged to conduct classes daily for a period of fifteen to twenty days. Teaching children daily and seeing their progress first-hand is critical to the adoption of the Pratham method within the system. Subsequently, each cluster coordinator trains all teachers in the ten to fifteen schools in his or her charge, often with Pratham support. The government also prints and distributes the required reading materials. For the rest of the year, the cluster coordinator visits the schools in his or her charge, demonstrates activities, and helps teachers move forward toward the stated learning goals. The strengthening of the capability of cluster

[12] Evaluations by J-PAL of a program in Bihar in which Pratham worked with Bihar government teachers to raise learning levels showed that a month-long summer camp with children grouped by level produced significant learning gains in both language and math. Moreover, these gains were still visible at the end of two school years.

coordinators to lead and support teaching-learning has been a critical factor in the scale-up process.[13]

In the 2014–15 school year, such partnerships were seen in Bihar, West Bengal, Madhya Pradesh, and Maharashtra.

Conclusion

In this chapter, we have analyzed the efficiency of the primary education sector in India; in particular, we have looked at what the available evidence tells us about how the provisions under the *Right to Education Act* (RTE) might affect learning outcomes.

The indicators on which the RTE focuses do not seem to be correlated with learning outcomes. For instance, there is a significant focus on improving school infrastructure, which actually seems to have no impact on improving learning. Similarly, the RTE mandates minimum qualifications for regular teachers, but this does not seem to matter for children who are at the bottom of the ladder. In fact, there is some evidence that more qualified teachers might discriminate against children with the most severe learning deficits. Furthermore, the RTE stresses the importance of libraries and the need to maintain a timetable, yet this seems to help only children in the top 10 percent of the class. Similarly, high teacher attendance also helps only children in the top 10 percent of the class.

What seems to work is addressing the needs of the child rather than the curriculum. The RTE provides a great opportunity for the country to renew its efforts to ensure that every child is in school, attending regularly, and learning well. The spirit behind the RTE is to guarantee that, after eight years of elementary schooling, every child in India will receive a good-quality education. Therefore, we need to ensure that this act does not remain merely a guarantee of “schooling” but also a guarantee of “learning.”

There is some evidence, as this chapter has discussed, that things that directly aid in a child’s learning, such as supplemental help, are more important for improving learning outcomes. Within the school, the overriding emphasis on completing the curriculum has contributed to a neglect of basic learning. Teacher hiring and training must not be based on academic qualifications alone; evaluation should include key elements of teaching ability such as content knowledge, ability to communicate, creativity, and child-friendly behaviours. Parents also need to be involved and empowered. The structure of the government school system does not permit much accountability to parents. In addition, many children in government schools are first-generation learners, and their parents have little clout with the educational bureaucracy.

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[13] The government partnership program was also evaluated by J-PAL in Haryana in 2011–12.

At the beginning of this chapter, we talked about the importance of education in ensuring that India reaps the fruits of demographic changes that will occur over the next few decades. However, the evidence that we have presented here paints a very dismal picture of the state of education in the country. It is imperative that immediate corrective action be taken to put the educational system in order. In absence of such corrective action, the demographic dividend might turn into demographic disaster and India might suffer the consequences of having a pre-dominantly low-skilled labour force. This would not only hinder India's performance in service-led exports but also weaken the government's efforts to transform India into a manufacturing hub. These adverse consequences might result in political pressure on the government to bring in more protectionist policies, which could further undermine India's economic growth.

References

Aiyar, S. and A. Mody. 2011. "The Demographic Dividend: Evidence from the Indian States." IMF Working Paper WP/11/38.

Banerjee, Abhijit and Esther Duflo (2011), "Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty" Public Affairs, New York

Bhattacharjea, S., W. Wadhwa and R. Banerji. 2011. *Inside Primary Schools: A Study of Teaching and Learning in Rural India*.New Delhi: Pratham Mumbai Education Initiative.

Eswaran, M., A. Kotwal, B. Ramaswami and W. Wadhwa. 2009. "Sectoral Labour Flows and Agricultural Wages in India, 1983-2004: Has growth trickled down and How?" *Economic and Political Weekly*, 44(2): 46–55.

Kotwal, A., B. Ramaswami and W. Wadhwa. 2011. "Economic Liberalization and Indian Economic Growth: What's the Evidence?" *Journal of Economic Literature*, 49(4): 1152–1199.

Murlidharan, Karthik and Venkatesh Sundararaman (2010), Contract Teachers: Experimental Evidence from India", http://www.econ.ucsd.edu/~kamurali/papers/Working%20Papers/Contract%20Teachers%20(24%20May,%202010).pdf

Pritchett, Lant and Amanda Beatty, (2011) "The Negative Consequences of Overambitious Curriculum in Developing countries". Working Paper, Harvard University

Ramaswami, B. and W. Wadhwa. 2010. "Survey Design and Precision of ASER Estimates." Mimeo. ASER Centre.

United Nations. 2009. *World Population Prospects: The 2008 Revision*. New York: Department of Economicand Social Affairs, Population Division, United Nations.

Vagh, S. 2009. "Evaluating READ INDIA: Development of Tools for assessing Hindi Reading and Writing Ability and Math Skills of Rural Indian Children in Grades 1–5." Mimeo.ASER Centre.

Wadhwa, W. 2009." Private Schools: Do They Provide Higher Quality Education?" in *Annual Status of Education Report*. New Delhi: Pratham Resource Centre and ASER Centre.

Wadhwa, W. 2010."RTE Norms and Learning Outcomes." in *Annual Status of Education Report*. New Delhi: Pratham Resource Centre and ASER Centre.

Wadhwa, W. 2014." Government vs private schools: Have things changed?." in *Annual Status of Education Report*. New Delhi: Pratham Resource Centre and ASER Centre.