Improving Reading and Arithmetic Learning at Scale in India:

Pratham's approach to teaching and learning

Background

Although well over 95% of Indian children in the age group six to fourteen are enrolled in school, available data indicate that even after five years in school, only half of all children in fifth grade in India can read can read simple text meant for second grade children.[1] The situation with arithmetic is even worse. The low levels of learning reported year on year, suggest that India's children are in a "big stuck".[2] Like many other systems, the Indian school system is structured by age and grade; it is expected that children will move through elementary school grades meeting rising curricular expectations with each year. But the reality is that most children do not get much support for learning at home because parents are not very educated and in school there is insufficient attention to children who do not make adequate progress academically. As a result, a substantial proportion of children do not develop basic skills like reading and arithmetic in the early grades. With weak foundational skills, it becomes difficult for such children to make progress in later years. This trend is reflected in flat learning trajectories seen in empirical work that tracks children longitudinally.[3] Further, there is growing evidence that learning levels are showing a declining trend – meaning that in recent years, each subsequent cohort is performing below the level reached by the cohort before them. Putting all these together, we are see that it is possible for a child to complete five years of school without acquiring fundamental skills in reading and math.[4]

While it is true that there are still children in India who are "left out" or not enrolled in school, for the six to fourteen year old age group, this figure for India as a whole is less than five percent. Hence the big challenge in elementary education in India is that of children who are enrolled in school but who are getting "left behind". These children are far below the level that they are expected to be at given their age and grade.

Without a strong foundation of fundamental skills, it is impossible for children to move ahead. To begin the journey of learning, it is important that all children learn to read fluently, to understand what they read, to express themselves and be comfortable with basic arithmetic. This foundation needs to be built durably in the primary school years. Regardless of how the ultimate goals of education are defined and what the expectations are of developing a broader set of skills and concepts, basic reading, comprehension, expression and arithmetic are the building blocks that will enable them to make progress in school, as well as fuel independent learning outside of school. Perhaps even more than ever before, we need to prepare our children not only for what they will encounter in school but for an increasingly more complex and faster changing world around them.

---

[1] See ASER (Annual Status of Education Report) reports 2005 to 2014 at www.asercentre.org
[2] The term "big stuck" has been used by the economist, Lant Pritchett of Harvard University to describe the situation with children's learning in India.
[3] See Pritchett and Beatty (2012) The Negative Consequences of Overambitious Curricula in Developing countries. Working paper 293. Centre for Global Development. Washington DC.
[4] See ASER reports.

Why is a special initiative needed to help children in Grades 3 to 5 in primary school?

Pratham's Read India initiative was started almost ten years ago as a response to the realities of the Indian context. There continues to be a large number of children who have been in school for at least three to five years and are still struggling with basic reading and arithmetic.[5] The scale of this challenge is huge and therefore response needs to be on scale as well. Using rough calculations based on Census 2011 data, we find that there are about 25 million children in each single year age group in India. Translated into actual numbers and using estimates from ASER data, calculations suggest that about 50 million children in Grades 3 to 5 need immediate and urgent help if they are to have a real chance to complete elementary school meaningfully. Given the size of the school going population in India and the scale of the problem, the solutions need to be effective, low cost and scalable. This is what Pratham aims to do through the Read India program.

Broadly speaking, the theory of change underlying Pratham's Read India initiative is based on several key elements. First, school systems and parents need to move their focus beyond schooling and squarely onto the issue of children's learning. If children do not have the basic skills like reading and arithmetic then special efforts have to be made to ensure that they are able to acquire these capabilities. Business as usual or simply more years of schooling will not solve the problem. Time has to be found, and focused attention has to be given for building these basic skills. Appropriate instructional methods are needed to enable children acquire these capabilities. To learn to read, children need a lot of reading material that is at their level. Finally, changes in children's learning has to be tracked so that their progress can be reviewed and course corrections done as needed.

While there is still time for children in Grades 1 and 2 to pick up foundational skills, for children in Grade 3 to 5, time is running out. Already, their textbooks and curricular expectations are much higher than what these children (even with the help of their teachers) can realistically achieve. And without some immediate, urgent and accelerated support for building basic learning skills, the likelihood for meaningfully completing the elementary stage of schooling will be very low.

What are the key elements of Pratham's teaching-learning approach?

The teaching-learning method developed by Pratham was originally designed keeping in mind children who have already reached Grade 3, 4 or 5 but still have not acquired basic skills. (This

method is sometimes referred to as "CAMaL" – the word CAMaL stands for "combined activities for maximized learning". It is also described as "Teaching-at-the-Right Level"). At the core of Pratham's instructional practice, there are a set of seven basic elements. First, regardless of age or grade, the starting point for instruction is where the child is right now. A basic assessment tool is used one-on-one, individually with each child to understand where to begin. To

---

[5] In 2014-15, Pratham was able to impact over 6 million children either working in communities or in partnership with governments.

understand where children are, Pratham uses simple assessment tools for reading and for arithmetic. These tools are available in twenty Indian languages.[6]

> The assessment tool is very simple and easy to administer. Before beginning to work with a group of children, it is important that the instructor (whether it is a local volunteer or a school teacher) spend time with each child to understand the child's current level. The instructor and the child sit together and the child is encouraged to read and to do some simple arithmetic tasks. The one-on-one interaction between the teacher and individual child is an essential first step. It helps each of them to get an initial sense of the other before embarking on the journey of learning and teaching.

Second, achievable goals are set. These goals are clear and easy to understand for children, parents and instructors.

> Knowing where you have to reach is essential for any journey. For instance, in reading, the goal is to be able to read a simple short story fluently and with understanding. Just looking at the highest level of the tool ("story" level) helps parents, teachers and children understand where they have to reach. Similarly in arithmetic. This demystification of what is meant by "learning" is needed in contexts where a majority of parents are not very educated themselves and where teachers are guided by the need to "complete the syllabus".

Third, for the purposes of teaching-learning, children are grouped according to their current learning level rather than by grade.[7]

> Now comes the step where assessment is translated into action. The tool has four levels of reading proficiency (and a fifth level which comprises of children who could not even do the first task). Once the instructor or teacher has heard every child read or try to read, she is aware of who is stumbling at which stage and why. In addition to helping the instructor get to know each and every child, the assessment process enables children to be grouped according to their current level of reading. This is the starting point. As children make progress, they move to the next group.

> The number of groups is contingent on the availability of instructors/teachers. Ideally, if there could be five instructors/teachers then each group would have an adult. But it is rarely the case that a school will have more than three teachers for five grades. So groups are clubbed together to match with the number of available instructors/teachers.

Fourth, combining a variety of activities is very effective for maximizing learning. Some of these activities are the similar for all groups and some activities are tailored to the level of the group. Moving away from the usual age-grade organization of teaching to level wise groups for instruction is an important element of the effectiveness of the Pratham method.

> It is well known that children learn in many ways. Hence activities need to be designed that stimulate different kinds of learning. Whether it is math or language time, children listen, say, do, read and write simultaneously. For example, in a reading "period" of about an hour, a

---

[6] A sample reading tool is given here. Similar tools are available for arithmetic.
[7] See a series of impact evaluations using randomized control trials of Pratham's work by JPAL. Search on http://www.icontact-archive.com/2tHo2txPcQb9iIKe9ftCX3WN4I44K3T9

number of basic activities are done. These include reading aloud, discussions on what has been read, phonetic games, vocabulary exercises and writing.

There are some common activities that all groups do such as reading stories aloud and then discussing them. Phonetic activities and word games are played keeping in mind the level of the group – both what they can do comfortably and what is challenging for them. Mind mapping activities are also done to grow vocabulary and to organizing thinking thematically or around concepts. Finally, children write every day; the focus is on putting down own thoughts and expression rather than on grammar or spelling.

Another feature of Pratham's approach is for children to work in groups. Sometimes, a big group does an activity together and later they break into smaller groups to carry on that activity. The activity is first demonstrated ("role-modelled") by the instructor in a big group. It is then practised in small groups. Grouping and re-grouping keeps the momentum going. It also enables children to learn from one another and spend much more "time on task" than is possible in a typical Indian classroom.

In India, reading aloud to children is not common either at home or in school in India. Parents of school going children are often not very educated. And there is not much to read at home.[8] In the process of learning to read, role modelling of reading is critical. Children begin to understand what reading entails when they can see live demonstrations of reading. Instructors and teachers are trained to pronounce words and sentences distinctly and carefully. The building up of phonemic awareness is a key component of decoding as is the ability to connect a sound with its symbol.

Any story or text that is used for reading is also discussed a lot. Even if a child's ability to read is yet to develop, the child can still participate wholeheartedly in discussions about what has been read aloud. Discussions enable children to connect what they know to what they have heard or read. Discussions allow children to ask questions, think of answers, disagree with one another, form opinions and expand their way of thinking.

Fifth, Pratham's method has evolved keeping in mind – scalability. Whether it is manpower or materials, available resources are used frugally and deployed as efficiently as possible. Effective use of time is a key piece of Pratham's approach.

From the experience of the last few years, we know that to bring about a significant change in basic learning levels of children in Grades 3 to 5 in a school takes anywhere from a total of 30 to 50 days (with an exposure of about 2-3 hours a day to the intervention). Evidence from past experiments indicates that periodic bursts of intensive activity are as effective if not more so, than daily engagement with children of this age group for this purpose.[9] The current "Read India" model has "learning camps" that run for a period of 8-10 days at a time and happen multiple times in the same school in the same year. During camp days, children are grouped by level. Between camps, children are given materials to use at home.

---

[8] ASER shows that close to half of all mothers of school going children today, have not been to school at all or had very few years of formal education. Less than 20% of rural households have any reading material at home.
[9] In a later section of the paper, there is a detailed discussion of the evidence that led to this conclusion.

Sixth, appropriate materials are needed to support the teaching-learning process.

To learn to read, the child has to have things to read. Close to 80% of rural children do not have anything at home to read other than their school textbooks.[10] Textbooks for their grade are often much higher and more difficult than the child's current ability to read.

For the "Read India" work, Pratham has developed special supplementary reading materials. Each child is given a small booklet of simple stories. The font size is large. To begin with the stories are quite short and based on contexts and situations familiar to the children. The length of the stories grows gradually as you move through stories in the booklet. The words are common everyday words. Since most children do not "own" books, they love getting their own book. Since the book does not have a grade level printed on it, everyone wants to look at it and read it if they can. Each story is used for 2-3 days.

Another key piece is the use of the "barahkhadi" chart. In India, this has been in use for several generations. It is a phonetic chart – a grid with consonant sounds as rows and vowels as columns. Each cell is a predictable combination of consonant and vowel sounds. At first, the chart is used to familiarize children with the sound-symbol links. Each row follows a predictable pattern. If you go down a column then you can see and say the same vowel sound but attached to different consonants. When you are more advanced you can find components of almost any word that you can think of. Children use this chart mechanically at first. But then they use it like a scaffold for helping them find words. At a more advanced level, the chart can be used almost like a puzzle game.


---

[10] See ASER figures cited earlier in this document.

Finally, simple measurement is used to track progress, to review movement towards goals and to guide any changes that need to be made.

For a teacher who has a large group of children, one of the challenges of teaching is how to simultaneously keep track of the group and pay attention to individuals. In addition, tracking progress over time is also essential. The reading assessment tool is a simple way to track the progress of both individual children and the whole group over time.
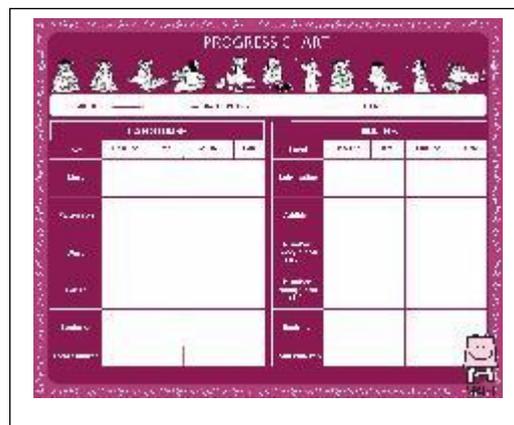
The teaching-learning approach used for reading in "Read India" has been described in some detail here. Similar interventions are also carried out for arithmetic. There are counting games with straws and rubber bands – where children count aloud as they pick up straws, find the number on a chart and then write it down. Activities with base ten (straws and rubber bands) are done daily. Operations are done with actual objects and with symbols until the logic of how objects and numbers are added or subtracted is clear to the child. Everyday word problems are discussed and then solved. For multiplication and division, children use "play" money/currency notes. All of this is done to ensure that by using actual and familiar objects, more abstract concepts are internalized.

Impact

Evidence has played big role in decision making in Pratham as programs have developed and evolved. Apart from internal program measurement that has also evolved over the years, there has been a series of impact evaluation studies on different aspects of the Read India work to test "what works" to improve children's learning.[11] Findings across these studies reinforce the current forms in which Read India interventions are being implemented. The key elements that have empirical support from the impact evaluations include:

- Grouping by level and then using appropriate instructional methods and materials seems to significantly improve learning levels for children who are aged seven or more, are in school who do not as yet have basic reading and arithmetic skills.
- Short periods of instructional time can be productive in raising learning whether it is in the summer camp mode or in terms of repeat camps during the school year.
- Teaching at the right level can be effective in the community being carried out by village volunteers as well as in the school by school teachers especially if grouping is done and activities appropriate for each level are done with children.
- Just distributing teaching-learning materials to schools does not show any effect.

---

[11] Many of these impact evaluations have been done by JPAL (Abdul Jameel Poverty Action Lab based out of MIT in the US). Randomized control trials have been used to carry out most of these studies. See Search on http://www.icontact-archive.com/2tHo2txPcQb9iIKe9ftCX3WN4I44K3T9. Also a summary is available on http://pratham.org/templates/pratham/images/Evaluations_of_Pratham_Teaching_at_the_Right_Level_TaRL_programs_by_J-PAL.pdf.

- In some studies, only teacher training does not show any change in instructional practice or in outcomes. Hand-holding, demonstrating, mentoring, monitoring needs to be done on an ongoing basis to support teaching at the right level.
- In almost all studies, the contribution of village volunteers in supporting children's learning is positive and significant.
- From studies where parental involvement has been evaluated, data suggest that with appropriate activities and materials, mothers, even those who are illiterate, can contribute and participate in helping their children learn.

A recent article in an international journal reviewed recent empirical evidence (studies using randomized control trials) on efforts to improve student learning. The authors conclude that "providing additional inputs without changing pedagogy or governance has had limited impact, whereas adapting teaching methods to reach the varied learning levels in developing countries is highly effective". Pratham's approach falls squarely into this category of efforts to improve children's learning.[12]

Concluding thoughts:

Pratham's teaching-learning approach continues to evolve. In its current form, it is used in at least two different settings: one, where Pratham team members directly work with children and communities. Village and community volunteers assist them in this effort. This form is called "Learning Camps". These "camps" are run periodically for a period of 6 to 10 days at a time, several times a year. Second, where Pratham works closely in partnership with government teams at state and district levels. Here the Pratham approach is adapted and modified as needed, for daily use by regular teachers in their classrooms.

Both, through direct work - demonstration via learning camps and indirect work - catalyzing the school system via government partnership programs, Pratham's objective is to bring about a substantial and significant improvement in basic reading and arithmetic levels of children in primary grades especially those in Grade 3, 4 and 5, on scale across the country.

For more details: see www.pratham.org and www.asercentre.org

The Pratham website Youtube channel has many videos on Pratham's teaching-learning methods.

CAMaL Pratham's teaching methodology: https://www.youtube.com/watch?v=jqZZ5zz7KDM

Harshad's Learning Camp: https://www.youtube.com/watch?v=gcr1cRMtFH0

Padho Jehanabad: https://www.youtube.com/watch?v=J-laQ7FOdeY

---

[12] Another useful article in this context: Michael Kremer, Connan Brennan, Rachel Glennerster (2013). The Challenge of Education and Learning in the Developing World. Science. Volume 340. 19 April 2013. Sciencemag.org