BUILDING A COMPREHENSIVE MODEL OF EARLY LITERACY & NUMERACY FOR GRADERS I-II
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ABSTRACT

The early childhood years – from birth through age eight – are some of the most important for literacy and numeracy development. Children take their first critical steps towards learning to read and write very early in life and these abilities do not develop naturally, but require intensive instruction. Children need regular and active interactions with print. Other than this, children are exposed to diversity in the classroom. For instance, they may speak different languages or they may have different experiences. In such a scenario, it becomes challenging for a teacher to design appropriate instructional patterns to be most effective and appropriate for all children.

Keeping this in mind, a pilot program was implemented in Dadri, Uttar Pradesh, which aimed to build a comprehensive literacy and numeracy instructional pattern and assessment framework. The intervention aimed to develop an approach which would not only help young children learn to read and write, but also foster and sustain their interest in reading and writing for their own enjoyment, information and communication.

The following document details the experience of the pilot and provides a snapshot of the approach that was developed to help young children learn to read.
BACKGROUND

Early literacy and language development is closely linked to a child’s earliest experiences with print rich environments. The interactions that children have with such literacy materials, as well as with helpful teachers, play a crucial role in building competencies in language (particularly reading and writing).

Upon entering school, children are acquainted with a new place, teacher, class and other students. However, every child has a unique identity, different abilities, potential, background and behavior. In such a scenario, teachers need to understand the best possible ways to help children become keen readers. Hence, there is a need to think about the socio-economic background of children as well as their individual competencies while developing an approach for literacy and numeracy for Grade I-II children.

Moreover, traditional approaches towards teaching reading are slightly inclined towards the behaviorist theory as they assume that such skills can be taught in isolation. These theories/approaches regard children as passive learners and classroom activities being teacher directed processes. However, more recent views of literacy and numeracy, based on newer research, considers the role of the child as an active learner, able to integrate information with existing knowledge, thereby allowing the process to be child-centered. This forms the cornerstone of our approach.
WHAT DOES BUILDING A MODEL ENTAIL?

‘Building a model’ in pedagogy is an exercise in knowing systematically what one already understands from ‘praxis’ or perception. The exercise answers questions with evidence for further systematic analysis and actionable research. Following are some of the components of such a process:

- Articulating a question that needs to be answered, i.e., creating a hypothetical question
- Framing an action plan that would justifiably answer the question
- Analyzing results, with openness to falsify ability/confimation of the hypothesis. Further delving into data for more refined questions, or further advanced questions if any

Consequently, one of the first steps as part of the pilot in Uttar Pradesh, was to look back at the vast experiential knowledge of literacy and numeracy for early grade children that already existed within Pratham. This was then used to create appropriate instructional patterns for this age group:

A. Shishuvachan Program:

The Shishuvachan Program was a school readiness program for children between the age group of 4 to 5 and studying in Grades I-II. The program, which was implemented in Delhi and Mumbai, aimed at developing some of the following competencies in children:

- Ability to concentrate (listening, observing)
- Oral skills (storytelling, reciting poems)
- Communication/conversational skills (picture reading, expressing etc.)

Adding to the above, the program focused mainly on activity based learning of letters (alphabets) and recognition and counting of numbers up to 20.

At the time, the program had been successfully implemented in non-tribal areas. However, the same program could not be implemented in the tribal areas due to children’s lack of familiarity with Hindi. Hence, a special language intervention was designed for tribal children, so as to introduce them to the medium of instruction in school, which helped them learn alphabets and numbers before they entered formal schools in Grade I.

B. Pehla Kadam:

Pehla Kadam was a school readiness program for children in the age group of 5-7 years that was implemented in Delhi. Its objective was to help children learn letters and have number knowledge before their admission in school. As part of the intervention, activities related to only letters and numbers were carried out. While the program was quite successful, it was run for a short duration only (for a one month period). This program focused on letters and numbers (1-9) using activities such as akshar kudh, mama jikaghar, hawa chal rahi hai etc.
C. Nai Disha:
Nai Disha was a partnership with the government of Uttar Pradesh, which focused on Grade I-II. **It built upon our previous experience and focused on teaching math and language.** However, it did not have a clear emphasis on achieving school readiness.

In such a scenario, the Pratham team was left with a major question - “what would a comprehensive literacy and numeracy package look like.” Moreover, there was lack of clarity on certain issues, which needed to be addressed. Some of these points were:

- Do children need to learn letters before learning to read?
- Should only a few letters be initially stressed upon while preparing the reading instructions for children?
- Should children be given a longer duration package – should it be an accelerated remedial package or should it be in line with the pace of their cognitive development
- Should children be made to practice writing letters first, rather than whole sentences?

Keeping this in mind, there was an urgent need to research and develop a model that would answer all these unresolved questions.
OVERVIEW OF PILOT

As part of the exercise for developing a model for Grades I-II, an annualized calendar of comprehensive literacy and numeracy package was planned. This was the beginning of learning to think of language as an object of thought and literacy as the formal form of that process (emergent, basic, content literacy etc). Thus, the entire process hinged on “meta-cognition”. Similarly for numeracy, children start taking their initial steps towards enumerative logic, which till now had only existed intuitively in the form of comparing quantities etc.

A. Pilot Objectives:
The objective of the pilot was that at the end of the project, after about 7-8 months, children should be way ahead in their journey of exploring literacy to its fullest possible depth. Children should possess:

- Sufficient concept about print development
- Good oracy skills – they should be able to use language to express narratives
- The habit of reading and writing with pleasure

B. Pilot Location:
The pilot was conducted in 10 schools of Dadri and Bisrakh block. Both the blocks are situated in the Gautam Budh Nagar district of Uttar Pradesh, India. (The district is about 50km southeast of New Delhi). These classrooms were selected from 6 government and 4 private schools, with Grades I-II being selected from each school. The average class size was 25-30 students, with both girls and boys in each class. However the average students that regularly attended the classes was about 20-25 children. And across the 10 schools, 396 children were covered at the time of assessment.

In order to conduct this pilot a residential office was set up in Dadri, where a team of 9 people was based for this project. Their role was to look after schools by directly providing academic instructions to children, while also frequently meeting parents as a part of community mobilization. Out of this team, one person was given the responsibility to look after the day-to-day operations as well as provide academic and administrative support.

C. Types of Models Implemented:
There were two types of interventions implemented in the 10 schools:

- Daily Basis Mode
- Short Burst Mode

a. Daily Basis Mode: Where inputs were given to children on regular basis
6 out of 10 schools received instruction on a daily basis. Out of these 6 schools, 4 were government and 2 were private. 8 classes were running in these. Four days in a week (from Monday to Thursday) classes were conducted by the teacher. Saturday was kept for exposure visit (project classes) in their respective school premises. Following is the list of schools that were part of the daily basis intervention (4 + 1 days per week):
### PARTICIPANT SCHOOLS & CHILDREN FROM GRADES I-II

<table>
<thead>
<tr>
<th>S. No.</th>
<th>School’s Name</th>
<th>Grade I (No. of children)</th>
<th>Grade II (No. of children)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government primary school Tilapta</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>Government primary school Rasulpur Dasna</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>Government primary school Khurshedpura</td>
<td>22</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Government primary school Beel Akbar pur</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>5</td>
<td>Veerangana Lakshami Bai public school</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>Ramkrishan Pramhansh Sarawati Vidhyamandir</td>
<td>26</td>
<td>27</td>
</tr>
</tbody>
</table>

b. **Short Burst Mode**: Where inputs were given to children once a week

4 out of 10 schools received the short burst intervention, out of which 2 were government schools and 2 were private schools. Number of classes in these four schools was 7. Schools running under this calendar only received the intervention on Fridays (in other words only once a week). In 1 school Grade I-II classes had been merged, with a single teacher taking a 2-hour session both for language and math at a stretch. The following schools were covered under the short burst mode:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>School’s Name</th>
<th>Grade I (No. of children)</th>
<th>Grade II (No. of children)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government primary school Sadopur</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>Government primary school Jamshedpura</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>Aarya public school Bishadha</td>
<td>48</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>Aadrsh public school Jarcha</td>
<td>28</td>
<td>26</td>
</tr>
</tbody>
</table>

D. **Delivery of Instruction:**

The intervention was split across multiple phases, with assessments accordingly conducted for each phase. During the pilot, a total of four phases were conducted – a foundation phase, plus four more phases. The foundation phase conducted referred to as the **“Warm up phase: Being prepared”**. Here the main focus was to prepare children for class, school and for learning. The main focus of the first phase was to develop a foundation of reading, writing, literacy and numeracy skills. In the second and third phase, the focus was to develop and strengthen literacy and numeracy skills that children learned in the earlier phase.

*Note that the four phases were unique to Dadri. Based on the experience from the pilot, in interventions implemented elsewhere, the program was subsequently divided into three distinct phases – a warm up phase, followed by two additional phases.*
E. Allocation of Time:
Each day, a Pratham appointed instructor conducted a four-hour session during the school working hours. Two hours were kept for literacy and two hours for numeracy. Regular visits were also made by members of the content resource team, with the purpose of providing academic support to schools.

F. Grouping of Children:
In Dadri, classes were either separately conducted with Grade I-II children, or mixed together (where Grade I-II children sat together). Furthermore, within these classes, while working with Grade I-II children mixed groups were initially formed (with children from different levels in one group). However, later on – closer to the end of the intervention – level wise groups were created.

The thinking behind not abiding to level wise groups at the beginning was because majority of children at the time were at a similar level. As the intervention progressed however, the rate of improvement for different children varied. (This was due to the differences in children’s way of learning, varying levels of exposure to the environment-at-large, as well as varying support at home.) In such a scenario, closer to the end of the intervention (as required), level wise groups were also formed of children.

G. Monitoring Plans:
Out of the Pratham team supporting the intervention, one staff member was held responsible for looking after the content activity management in the classroom. She was entrusted with three basic responsibilities:
• First, for giving academic support to the teachers by demonstrating the activity, which was expected to be most appropriate for class learning.
• Second, to film classroom learning videos, which covered important aspects such as classroom management, off-task behavior and teacher’s demonstration of the different activities. (Note that the videos, which were created for the classroom learning activity, were for the benefit of teachers as they helped them evaluate their own teaching practices.)
• Third, to carry material to children’s classrooms, so as to promote print rich environment in school premises as well.

H. Material Creation:
All teaching learning material generated by the team rose out of field experience, with content being used only after it was found to be effective. Furthermore, the team paid a lot of attention to develop authentic material in order to meet the needs of all stakeholders:
• Instructors/students were given a chance to use new learning material in a way that helped them strengthen interaction with the class.
• The Pratham team helped teachers, student and parents by spreading awareness about learning materials, which would be helpful and useful for them in adapted learning processes.
To make the program more cost effective, low cost (such as picture cards, story cards, cut shapes, number/alphabet charts and material rotation plan etc.) were developed, which kept costs low.
I. Household Survey:
To know about the children in the target area, an in-depth household survey was conducted with every child who was enrolled in this study. The survey was segregated on the basis of personal, economic, social, physical and educational background of the members of the family. Every child who was enrolled was surveyed, with the entire exercise taking about 5 days. While conducting the survey, an effort to increase the interest and interaction of the parents was also made, where the focus was on the importance of conversation with the child and discussion on certain activities that could be done by parents, irrespective of their own literacy levels.

Survey Findings: The household survey helped the Pratham team understand and create an action plan for community mobilization. Most of the children here were first generation learners. Parents were generally not aware of the importance of education. Usually, there was no print inside their houses. Children who attended this project were Hindi speaking, which was also the medium of instruction in the school. Most of their parents were laborers.

Mobilizing communities: Based on these findings, once a week mothers were oriented on talking, storytelling and use of materials (orientation of *gupshup* with (talking to) their children, story cards, and worksheets). Later on, the process of distributing worksheets to parents was introduced, which were tied to easy to do fun activities.
WARM UP PHASE

During the Dadri pilot, in August 2013, an assessment was conducted to understand the situation regarding language in math. Additionally, along with the aspect of learning outcomes, an attempt to answer some of the following questions was made, via observations:

- Were they first generation learners?
- What was the economic background of the learners?
- Was the child’s home language and school language different?
- Did the child attend any Anganwadi/Balwadi (preschool) before school?
- Did parents talk to children on teaching or other than teaching?
- Did the child see any 3 printed story books at home?

While conducting preliminary assessment and observations the Pratham team tried to think about the reservations a Grade I child might have in answering questions for a surveyor. How would the child react? They realized that in case responses were not generated during the assessment, there might have been several explanations for the same:

- The child might know the answer to the question, but the fact that the surveyor is a stranger to him/her might lead to reluctance in answering.
- The child is oblivious to the answer of the question.
- The kinds of terminologies/administrative instruction used by the surveyor are totally new for the child, making him unable to understand the instruction given.

The team’s experience thus made them understood that children were not familiar with school and classroom processes and certainly not acquainted with the rigours of assessment. Furthermore, there was a need to promote motor, physical, socio-cultural skills and abilities (which are optimal for a child to acquire before a transition to a formal instruction). In such a scenario, the Pratham team came up with the solution of a “Warm Up Phase”, as part of which they developed a systematic group of activities that enabled the instructor to know the children and also familiarise them with schools, classes and classroom processes.

The various aspects of the “Warm Up Phase” that were developed based upon the experience in Dadri, have been elaborated in the subsequent section:
A. Objectives:
The objectives of the warm up phase are as follows:

- **Getting to know children**: Instructor gets to know children and they become familiar with school/class and what is expected out of them.
  - Pre literacy skills with activities for oracy development, storytelling, discussion, & scribbling.
  - Pre numeracy skills with activities such as understanding big-small, long-short; shapes, discussion on word problem etc.

- **Building "Class readiness"**: Children develop the habit of sharing, doing things in groups, concentrating.
  - Familiarizing children with school behaviors such as entry and exit into classrooms, washing hands before lunch, make a line.
  - Familiarizing children with classroom practices such as working in a group, sitting with companions, raising hand, wait for your turn.

- **Preparation of Assessment**: The instructor observes and understands the children. Furthermore, a warm up phase also helps students understand what is expected of them. (In Dadri, the instructors observed the class activities daily and made notes on what children were able to do and what they found difficult.)

- **Creation of an appropriate environment**: The instructor creates a print rich environment with different kinds of story cards, naming of objects-blackboard, chalk, word wall, expression charts, reading corner, writing corner, activity corner and more.

B. Suggested Activities for Creating a Learning Environment:

- Teachers discuss the dos and don’ts of a classroom with children, such as raising your hands, keeping your surroundings clean, waiting for your turn, taking permission before entry or exit from the classroom, etc.

- Teachers respect and call out children by their names.

- Each day, children and teachers arrange books in the library corner together.

- Teachers and children sit together in a U shape (wherever possible).

- Groups are formed when required and they move from group to group to facilitate learning.

- Responsibilities are assigned to children while leading a group.

- Good behavior is regularly appreciated by teachers.

- Each day, teachers guide children to maintain good hygiene such as bathing every day, washing hands before eating food, combing hair properly before coming to school, etc.
C. Activities for Pre-Literacy and Numeracy Skills:

- Each day, classes start with rhymes/songs “Gaalo Gunguna Lo”.
- Each day, a lot of gupshup (talking together) with or without stories takes place. This motivates children to share their experiences by using general introductions related to the content of the story or topic. Appropriate and equal opportunity is given to children so that they could express themselves freely. All responses from the students need to be accepted positively and appreciated by the teacher.
- Every day, teachers read aloud to the whole class and encourage them to discuss. This gives them an opportunity to express their opinions, state main ideas or themes from of the story and re-tell the story with a clear narrative structure.
- A lot of phonological awareness activities are conducted.
- Opportunities for writing in the form of scribbling are provided.
- Conversations with children on pre-math concepts where keywords such as more-less, big-small, up-down, right-left are carried out. This is done using sets of pictures, which were shown during the class activity.
- Children play, explore through shapes and explain their work; they use materials such as bundle-tili (bundles and straws). This helps them in developing counting sense. Thus children can comprehend base tens concept and are able to count items from 1-9.

During the pilot in Dadri, after 26 days of warm up activities, baseline testing of literacy and numeracy was conducted. The results showed that most children of Grades I-II were able to understand simple instruction and follow administrative instructions. They were also familiar with phonological awareness question, knew how to open a book realized what should be read and drew/wrote on the story recited in the class. Comparably, in numeracy, almost every child knew pre-math concept, could make bundle, could tell ending number and could arrange colors in a recognized pattern. This success was a result of creation of a learning environment where children formed and sat in U shape, raised hands before answering any question, waited for their turn to come, participated and cooperated well with teacher in every activity.

Children didn’t know the dimensions of group behavior, which included equal participation of each group member and the importance of forming groups. Yet, as a result of the warm up phase, they could form groups with simple instructions such as “apne group mein baitho” (sit in your own groups) and work together.
ASSESSMENT

What does one mean by assessment? Many people assume it to be synonymous to testing, but the main purpose of assessment is not to collect information, but to:

- Understand needs of children – and deliver instruction accordingly
- Set, communicate and track goals

Hence, in considering the role of assessment and how to best conduct it in early grades, one needs to understand children themselves; the pace of cognitive development in this age group, and their socioeconomic backgrounds.

While trying to understand the impact of working continuously for a period of 7-8 months with Grades I-II children in Dadri, the Pratham team came across various assessment patterns. But they often faced difficult questions regarding assessment:

- On what basis should assessments be conducted, because children in Grade I had just gotten introduced to formal learning atmosphere, whereas Grade II children had completed a year?
- Which competencies were important prerequisites to be able to read and identify numbers?
- If competencies prior to reading were important aspects of learning to read, then what would be the correct order for assessment?

Without knowing the answers of the questions above, there wouldn’t be a correct way to assess. Therefore it was imperative to do the assessment of the competencies that came prior to literacy and numeracy. And as a result, the Pratham team designed a new assessment tool specifically for this age group with the help of internal and external resources.

A. Competencies Tested:

The assessment conducted in Dadri, included the ASER test (for language; reading ability and for math; number recognition, formal operation which include only simple addition and subtraction), as well as testing of domains of emergent numeracy and literacy. Assessment was conducted on one to one basis, with the approximate time taken per child being about 35-40 minutes in language and 30 minutes in math. The competencies tested have been given below:
### COMPETENCIES TESTED - LANGUAGE

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Competencies</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CAP (Concept about Print)</td>
<td>Ability to handle books, flip through pages, direction of prints (orthography relevant; i.e. left to right for Hindi, right to left for Urdu, etc.), ability to point out words as units of meaning (visually) separated by space before and after – “I go to school” – understanding each word as separated by spaces.</td>
</tr>
<tr>
<td>2</td>
<td>Phonological awareness</td>
<td>Ability to distinguish between and play with sounds at different levels. For instance, a word is said, post which children are asked to say what the first/last sound is. Furthermore, children may be asked to identify the odd one out (in terms of sounds), replace sounds in words and more.</td>
</tr>
<tr>
<td>3</td>
<td>Vocabulary</td>
<td>Knowledge of words and their meanings.</td>
</tr>
<tr>
<td>4</td>
<td>Baatcheet (Pragmatics)</td>
<td>Ability to converse; can children use speech to describe things in a simple sentence or sentences.</td>
</tr>
<tr>
<td>5</td>
<td>Scribbling</td>
<td>Ability to express their feelings/views in the form of writing. This has many stages – from the early stages of emergent writing involving symbolic drawings to more independent writing.</td>
</tr>
<tr>
<td>6</td>
<td>Listening comprehension</td>
<td>Ability to listen carefully and respond accordingly. Listening and speaking are important factors in the development of thinking, reading and writing. Listening is a complex, active process of interpretation in which listeners match what they hear with what they already know. Developing listening comprehension is a process of receiving what the speaker actually says, and then constructing, representing and creating meaning through involvement and imagination.</td>
</tr>
</tbody>
</table>

### COMPETENCIES TESTED - MATH

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Competencies</th>
<th>Particulars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pre-number</td>
<td>Ability to identify pictures and point out which has more or less items, which item is big-small and which is front-back/up-down. This concept is about understanding and developing vocabulary in terms of positions of objects.</td>
</tr>
<tr>
<td>2</td>
<td>Counting sense</td>
<td>Ability to understand numbers in terms of names, symbols, values and place.</td>
</tr>
<tr>
<td>3</td>
<td>Word problem</td>
<td>Ability to recall activities happening inside a story, explain what happened in the same and tell from a problem; if it is more or less from before and if yes, by how much.</td>
</tr>
<tr>
<td>4</td>
<td>Shapes</td>
<td>Ability to understand primary and secondary shapes in different contexts.</td>
</tr>
<tr>
<td>5</td>
<td>Patterns</td>
<td>Ability to recognize patterns and accordingly complete the same; color wise or in increasing/decreasing order and from that order tell which is the smallest and which is the largest.</td>
</tr>
<tr>
<td>6</td>
<td>Word problems with operations</td>
<td>Ability to solve word problems involving operations.</td>
</tr>
</tbody>
</table>
B. Preliminary Assessment:
To begin with, prior to the start of the intervention in Dadri, a preliminary assessment was conducted for children. This assessment revealed that mostly children didn't know where to start reading print. However, children who were going to private schools had higher print awareness (“CAP”) as compared to government schools. Phonological awareness tasks were unfamiliar for most students and they wouldn’t respond. On the other hand in math, many children were able to correctly attempt pre-math concept domain tasks, while with word problems, they could mentally subtract the same, but they could not do so algorithmically. For shapes, most children seemed familiar with circles and other items that were round.

C. Periodic Assessment:
Over the course of the Dadri pilot, baseline, midline and endline assessments were conducted with the targeted children. Children were tested on specific math and language competencies. In total more than three hundred children from 10 schools were assessed on certain competencies in language and math. A brief snapshot of the process followed has been given below:
- Three assessments, baseline, midline and endline, were conducted over the duration of the intervention.
- One on one assessments were conducted for each child.
- Every child was given a unique ID so that when language and math data was analyzed it became easy to find and match data of a child.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Language</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Baseline</td>
<td>356</td>
</tr>
<tr>
<td>2</td>
<td>Midline</td>
<td>344</td>
</tr>
<tr>
<td>3</td>
<td>Endline</td>
<td>311</td>
</tr>
<tr>
<td>4</td>
<td>Grade I common children</td>
<td>148</td>
</tr>
<tr>
<td>5</td>
<td>Grade II common children</td>
<td>135</td>
</tr>
<tr>
<td>6</td>
<td>Total common children</td>
<td>283</td>
</tr>
<tr>
<td>7</td>
<td>Common children for ASER</td>
<td>277</td>
</tr>
</tbody>
</table>

(Note that only common children were used for the baseline vs midline vs endline analysis).
D. **Learnings from the Assessment:**

Below are some of the learnings from the assessment in Dadri. (Note that a number of concepts had a high baseline because of the warm up phase.) The main findings in language were:

- In concept about print 19 percent children still attempted word-by-word question incorrectly, unlike other competencies where almost all students could attempt it correctly by endline.
- In phonological awareness competencies, children struggled more with identifying objects with similar ending sounds, rather than starting sounds. At the endline 18% children in Grade I and 12 percent in Grade II could only get 2 out of 3 questions right. Children also struggled more with breaking three syllable words, rather than combining them. At the endline only 68% could correctly break syllable words.
- In vocabulary, children were more comfortable with picture naming than picture identification. 86% could correctly identify pictures in 5 chosen categories at the midline level compare to 54% for picture naming.
- Pragmatics and noun identification saw the most improvement in performance between baseline and end-line, particularly because of Grade I student’s higher confidence in discussing topics.
- At baseline level 41% students made no attempt at reading the given paragraph; this was reduced to 14% students at endline, showing an increase in confidence to attempt the question.
- In oral comprehension all questions showed a stronger jump from midline to endline than baseline to midline, this trend wasn’t observed with written comprehension.

The main findings of the math assessment were:

- At endline almost all students could correctly attempt all pre-math questions; which had a high baseline because of the warm-up phase.
- In the question on counting and making a bundle, there were stronger jumps in making a bundle than counting a bundle, which had higher level of competency at the baseline.
- With word problems, almost all students could understand the problems on addition and subtraction. But out of these students, most Grade II students could also correctly answer the question (about 91 percent of the total children) whereas the percentage of students was much lower for Grade I (76 percent). In all questions the jump from midline to end-line was less.
- With arranging patterns, students struggled with arranging objects in increasing-decreasing order (where the jump from baseline to endline has been 54 percent to 83 percent), while almost all students could correctly arrange smallest-largest and by color. Stronger jumps, particularly for Grade I, were made from midline to endline.

E. **Recommended Assessment Practice**

Grade I children had never been in this kind of setting before and had just got enrolled in school. During the Dadri pilot, the team found Grade I children shying away and facing difficulties in coping with school environment or administration of assessment. On the other hand, the team found that Grade II children were well versed with the school settings. They saw that children perceived that they were in a premise referred to as a school and that there was an instructor called a ‘teacher’ whose role was only to instruct/decide what is good for the child. However Grade II children could not follow simple instructions;
this could be because of the limited attention span of this age group. Following are certain recommended practices for this age group:

- **No assessment till the instructor knows the child and the child knows the instructor:** Grade I children are very young – they need time to settle down. They are still in the process of learning about what it means to be in school, in class. They are beginning to understand the instructor/teacher. They are getting familiar with what is expected of them as individuals or in groups. Keeping this in mind, it is important to give children time to settle down as well as give instructors time to understand and get to know the children. Only after a month of activities (referred to as the warm up period) should one consider doing any kind of formal or one-on-one assessment.

- **Have a warm up phase:** The initial period should be used systematically for doing a series of activities that help gauge what children can do easily and what they are struggling with. This is the first step in connecting any kind of assessment in a meaningful and on-going way to content, materials, instructional activities and to the organization of teaching and learning.

- **Importance of class observation:** How children learn, what they learn and how they learn is not just a factor of their individual set of characteristics but also depends a great deal on what is being done daily in the class (planned and actual activity) and on what and how other children are participating (participation, engagement and value added by the group). During the month of warm up activities – the instructor or the content resource person/monitor who visits the classroom can closely observe and note down how children are doing specific activities. For example for reading aloud and gap-shap – for each story that is read aloud, the instructor should have a set of gap-shap questions or statements that she is planning to use. At the end of the day it would be good for her/him to note down what “worked” and what did not to modify the strategy for next day. In addition to understanding what worked with the group, he/she can note down 2-3 individual cases. For example: “Rishabh was quiet the whole time. He simply did not engage. On the other hand, Dropti was so enthusiastic that she spoke all the time and in fact it was difficult to manage her.” This way the instructor gets into the habit of reviewing that day’s work and also noting the group and individual traits. This is assessment. And it should feed into instruction.

- **Set a new pattern of assessment after a month:** A set of key domain areas can be decided for young children (eg. exposure to print, phonological awareness, response to reading aloud, ability to recognize letters, numbers, ability to categorize, solve word problems etc.). A set of activities should be designed that can be done with groups of children (4 or 5) and the actual assessment can be done in these small groups over a week.

- **Clear and short administrative instructions:** Administrative instruction is such an area which has to be carefully designed in assessment of young children. Grade I children have very short attention/retention spans. Thus, they face difficulties in understanding the kind of administrative instruction given during an assessment. Consequently, the instruction must be short, clear and should not appear to children as if they are being tested.
TEACHING LEARNING ACTIVIES: LANGUAGE

Reading is a process, which is about deciphering script to understand meaning, which means reading, does not develop biologically as language development (speaking). If reading is a process then, the question arises that how do young children learn to read and what is the best way of teaching reading. This leads to the question that whether reading instructions should be “meaning based” or “drill based”. “Meaning making” is the main goal of the process of reading, and the drills, help this process to an extent. Thus, it becomes more important to understand the processes of learning to read that children apply in early grades.

In recent years, most educators and researcher have come to advocate a balanced approach to early reading instruction, promising attention to basic skills and exposure to print rich environment. Young children in Grade I need to receive explicit and implicit instruction, practice with sound structures and comprehension. Throughout the pilot in Dadri, comprehensive well-sequenced phonics instruction in grades was shown to reduce the incidence of reading difficulty and accelerates the growth of the class as a whole. Some of the different activities for language that have been developed include:

A. **Oracy (Baatcheet)**: Children of Grades I-II come with the knowledge of their mother tongue. They are also aware of when and how to use the language. Besides, they are capable of making sentences using their own vocabulary depending on the situation and requirement with great ease. Not only can they use their mother tongue, they are also aware of the rules of language. However, they cannot define the rules in a formal way. Children gain this knowledge of language through their experiences and interactions with the elders. Thus, their oracy skills are developed on their own through these experiences and interactions. Initially children talk in their common dialect. It may be a bit difficult for the teacher to understand them at this stage. However, it is important that the teacher gives due respect to their dialect.

This ability of children to think and put forth their opinion also goes a long way in helping children to develop their reading and writing skills. Children also have new experiences while using language in different situations. These experiences further develop their oracy skills. If the teachers encourage children to link their own personal experiences with language, children are able to understand the story better. This increases their interest in reading.

During the Dadri pilot, keeping in mind the importance of oracy, various activities were systematically done in classes. During the warm up phase, the objective was to help children articulate and express their experiences, without the teacher’s prompting. For this purpose, some of the following activities were conducted:

- I like it...
- If I had...
- Your mind...
- Discussion on pictures...
- Puppets talk...
• He said...
• If I...

Doing these activities, not only helped children express freely but their impact on story discussions was quite visible. While discussing stories, children used the language they often spoke at home.

In the pilot in Dadri, apart from the activities mentioned above many more activities were conducted in small group activities. Children could now think about a story – discuss what happened first, then second, and at the end; with all this being facilitated by the teacher in the classroom. Eventually this helped children order their thought and express freely. The activities conducted included:

• Creating pictures through stories
• Shuffled picture
• Story through characters
• What next?
• Say in one minute
• Dialogue: say what will you say?
• Puppet is a story

Activities mentioned above, were done as a small group activity in a class. As a result, children started creating stories individually as well as in groups on any subject, picture, character etc. It was getting apparent that children’s diameter of thinking was increasing.

B. Story: In the initial days, if stories are read out to children, it becomes easy to attract them towards reading and writing. Listening to stories has great benefits. It helps children in understanding the characters, the plot, incidents and the theme of the story easily. Reading out stories form the book also introduces children to written text. Besides, daily repetition of reading out stories from the book also helps children understand the nuances of reading. A child is better able to grasp that reading does not mean reading alone; it also means understanding what is read. This develops their comprehension abilities. In the beginning it is difficult for children to understand the written text and pictures. But gradually as they keep observing the reading of their elders and teachers, they become aware of the use of language. This helps children in reading through recognition of letters as well as decoding. Story telling with books is an obvious way to introduced children with books and understands how books are handled. This exposure to print is critical to children who are unfamiliar with books. Watching an adult handle books, turn pages, look at pictures helps children learn about different aspects of books and texts. Listening to words and sentences being read out with clear pronunciation and seeing the words and sentences in text enables children to begin to write standard language.

During the pilot in Dadri, a lot of story related work was done with children over the course of the intervention. The pictures, text, font size, context, etc. were all considered while selecting stories. The team also created a number of strategies while working with stories:

• In the warm up phase the focus was to work with stories in such a manner that children developed the ability to listen patiently and understand what the story was all about.
• Furthermore, stories also made children familiar with the written formation of letter symbols.
• Instructors/teachers focused on narrating stories with intonation and initiated conversations related to the same such that children developed comprehension and oral expression skills.

• It was imperative for children to hold story books and teachers would read these stories to children; with the aim being to develop children’s knowledge on various dimensions of concept about print such as reading from left-right, top-bottom, swiping pages and understanding the text.

• Listening to stories and conversations regarding the same also helped increasing the knowledge periphery of children.

• After this children were ready to share their experiences in context of the stories and were able to think logically about what lay ahead in the mentioned story.

• Finding favorite words in the stories also became a popular activity. In the beginning when children were not able to recognize letters, the instructors still asked the children to find the main character’s name from the story and write it on the wall or floor. Gradually children could write words effortlessly without even searching in the story.

C. **Phonological Awareness**: Phonological awareness means the ability to recognize and manipulate sounds. What is required is the ability to recognize the sounds orally first and then from the written text later. This ability is termed as phonological awareness. Children are aware of these sounds naturally. Had it not been so, they would not have been able to speak or understand language. To learn reading, it is important for children to understand the sounds and how words are formed through the use of these sounds. Sounds are combined to form words, and words are combined to form sentences. This knowledge is very important for children to learn reading at a faster pace. Thus, it is important to have activities related to sound followed by activities related to letter recognition on a daily basis in class.

As part of the pilot in Dadri, in order to develop understanding of phonological awareness in a language class, from the beginning of the warm up phase, activities were done combined with the right kind of instructions. Some of these have been listed below:

• Combining units into words
• How many sounds in a word
• Sentence – Break down into syllables
• Combine words into sentences
• Sound manipulation
• Ending sound
• Starting sound
• Odd one out
• Rhyming words with ‘O’

To be able to read a word, it was important to understand how a word is formed and is uttered. During the warm up period in Dadri, activities of phonological awareness started with word recognition games.
But by the end of this period children were only able to break down words till 2 syllables like “मेज़” – “मैं”, “ज़” (table). Even in Grade II, children were able to break down 3 syllable words.

It was interesting for children to do phonological awareness activities by taking the words from the stories. However, children still had to break 3 syllable words in this manner – “मिठाई”- “मिठा ‘ई’ (sweets); किनारा ‘कि’ ‘नारा’ (corner), etc. “Estimate what could be the word” activity was very popular amongst children. Furthermore, children struggled with the activity “change the sound, create a new word” till the end of phase end.

In Dadri, during the first phase phonological awareness activities were conducted verbally and by the last phase they were done in writing. Similarly, at syllable level, activities were conducted such that children could comprehend the same. Furthermore verbal-written activities at phonemic level were done with them. During phonemic awareness activity teacher never forgot to issue instructions; “break down and write in small sound”. Every child was given a chalk and was asked to write down the word either on the floor, wall or copy.

D. Phonic Drills: It is important to recognize that every sound has a corresponding symbol in order to learn reading and writing.

- **Letter Recognition:** A proper understanding of sounds and their symbols help children in recognizing the word quickly. Thus, it is essential that at least one of the letter recognition games must be taken up in class each day. Games with letters and words are easy way to build basic decoding skills and help children connect sounds to symbols. There are many games that can be played orally and with letter, story cards and alphabet charts. Once introduced, children themselves can play such games. Decoding or learning to automatically decipher sound-symbol units are extremely important components of learning to read and of gaining the confidence and the capability to deal with known and unknown texts.

In Dadri, while playing such games, many meaningful and meaningless words were formed along with 4-5 letter recognition. The letter games were very popular, with children being very enthusiastic about games which involved letters made from cut out cardboards.

- **Consonant vowel combination:** In a number of Pratham’s interventions with primary grades, the barakhadhi (syllable chart) is one of the tools that has proved to be very useful in teaching language. In the Hindi language, the barakhadhi is a combination of 12 vowels and 52 consonants, which when combined together – result in 626 unique symbols and sounds in the Hindi language. It is difficult for children in this age group to understand and remember all these symbols and sounds. In such a scenario, activities using the barakhadhi are broken down in various ways.
During the Dadri pilot, from the first phase itself, various games focusing on letter-vowel pattern understanding were played. To begin with, symbols, which children recognized easily, were used for the purpose of understanding single consonant vowel patterns. This was done using strips from the barakhadhi itself. A short glimpse of this activity has been provided in the below table:

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>म मी</td>
<td>म मी मीन</td>
<td>Separate strips from barakhadhi were given to children to read out in groups</td>
</tr>
<tr>
<td>ट टी</td>
<td>ट टी टीन</td>
<td></td>
</tr>
<tr>
<td>च ची</td>
<td>च ची चीन</td>
<td></td>
</tr>
</tbody>
</table>

Note: Barakhadhi units could be written on pieces of paper and pasted on the wall. Instructors could converse using these units. For example: “If I have to convert “ल” into “ले” so I will put a ए (मात्रा) on “ल”. Similarly, now tell me if I have to convert म into मे then what should I do?” Children were given chalks and were allowed to write on wall, floor or in their copies.

In the second phase of the pilot in Dropti, the barakhadhi chart were used. The instructor conducted a number of activities after reading aloud barakhadhi strips and making children read from the same. Barakhadhi card and chalks were given to children and teachers used to pick any unit from the barakhadhi card. Children would find the same card and write it down. Furthermore, separate strips of barakhadhi were given to children from whom they were supposed to select any letter and create a new word. Children either individually or in groups made words and “express it” as teacher never forgot to say it. As a result children started grasping unit recognition and writing the same. For example: Strip ->ज जा जी जे जै जु जू जो जौ; Word -> जन जेट जाल जीप

E. Vocabulary: The knowledge of letters is important to be able to write words. But the value of a word is its meaning. Only when we use a word, does it become a part of our experience. Knowledge of more words is helpful in developing reading skills and greater comprehension. In order to develop children’s vocabulary, various activities related to word building and word usage should be done in class.

F. Writing: At a younger age, an important pre writing activity is for children to express their thoughts using paper and pencil. Children write in such a way initially that it becomes difficult to understand. But when a teacher instructs saying “Make whatever you feel like” followed by the question “What have you made”, it encourages children to think about their scribbling and put it in their own words.
Writing should not only be limited to developing expertise in using letters to form words and words to form sentences. Instead, it should mean the ability to think and then logically put your thought into words. Many times children are unable to understand that writing is simply putting down their ideas on paper. In this process, ability to form words and sentences plays an important role. That is why from the first day itself, children should be asked to draw or write whatever comes to their mind after story session. Even if children scribble, it is useful, since this activity proves to be very important for children to be able to express themselves. Along with it, it helps develop spelling and formal writing.

During the Dadri pilot, irrespective of children being able to write, from the beginning paper and pencils were given to children. Children were motivated to draw anything (on the basis of the story heard). When children were asked to draw anything on a piece of paper related to story, the first question which they had was “what could we draw?”. After hearing from the teacher “anything”, they would then ask, “can we draw flowers/flag/hut?”. Drawing anything led to a gradual change in their abilities; by the end of warm up phase every child without asking any question could enact characters of the story, draw the situation and scribble something based on the story. For this activity letter-consonant and story books played an important role. From the warm up phase to the first phase the effect of phonological awareness and letter games was seen in the writing when scribbling started converting into letter symbol writing. Reading and looking at stories several times made children copy/write names of the characters on the pages. In the second phase, the barakhadhi was used in different ways as well; its effect was clearly visible when children were asked to write something – since they would break/combine sounds in order to write them. As and when children’s sound/letter understanding developed, their writing improved. By the end of third phase children could write and express with the help of letter symbol recognition.

G. Children’s Literature in Classroom: Reading corner and instruction

Children must learn that the reading is for meaning making and hence, children’s literature is a non-negotiable in a classroom. Children’s literature, to be used in a class, needs to be engaging, close to the child’s cognitive horizon, with effective plots, font size and layouts. There could be books that are not under any strict vocabulary control, and can be used for storytelling, ie authentic text. Books for reading instructions can be basal in nature, and many variations and formats are possible in that box.

- Reading Corner:
  - There should be a book corner in each classroom so that children have easy access and exposure to books and texts. In comfortable library settings children will often pretend to read, using visual cues to remember the words of their favourite stories.
  - The corner should have various kinds of reading material (story books, paragraphs, sentence fill exercises, puzzles and group worksheets).
  - Daily, there should be a slot of 20 minutes where books are kept in the middle of children and they are allowed to pick any book of their choice.
  - Books that are provided should be rotated very frequently (every fortnight or so).
  - Children should be given freedom and encouraged to take books home. Regular visits to the reading corner may help children develop the habit of reading for lifetime.
• Schools should be encouraged to contribute by allowing access of their library.

• **Reading Instructions:**
  - A number of good books can be used for reading instruction. Systematic activity around books/story can be done in the classroom.

**Conclusion:**
The Dadri pilot showed us that we should:
- Create daily experiences of being read to for children, making them “pretend” to read and listen to engaging stories.
- Create opportunities for children to talk about what is read; this should also focus on the sounds and parts of language as well as the meaning-meta-linguistic.
- Conduct activities for developing phonemic awareness, such as sound games, finger plays, games in which phonemic patterns such as rhyme and alliteration are significant.
- Provide writing experiences that allow the flexibility to use nonconventional forms of writing at first (invented or phonic spelling) and over time move to conventional forms.
- Use print-rich environments; provide opportunities and tools for children to see and use written language for a variety of purposes.
- Allow daily opportunities to work in small groups, on focused instruction and to understand other children.
Glimpse of gradual development of writing skills in a child:
TEACHING LEARNING ACTIVITIES: MATH

Numeracy is the ability to process, communicate, and interpret numerical information in a variety of contexts. Although this definition encompasses the ability to accurately carry out arithmetical calculations, it goes beyond that to include conceptual understanding of numbers, a “feel for numbers” and the ability to apply arithmetic.

Numeracy perhaps is one of the best ways to develop independent thinking, as well as the ability to examine truth and stand by it. In numeracy we try to understand the world through shapes, numbers, quantities and logical relationships. We always experience the world, even without numeracy. But when we start noticing symmetry of shapes, become sensitive to rhythm in music, start seeing more or less in objects, we are becoming mathematically keen. The discipline of knowledge building builds on these things: spatial forms and relationships; quantitative concepts and relationships; and abstract logical relationships, is termed as numeracy. The study of numeracy is expected to result in the understanding of spatial and quantitative concepts and relationships and enhance the ability to use language in a more precise manner; to use notations and to be able to use reason in a more effective manner. Some of the combination of activities for math that have been developed include:

A. **Pre-Math**: The preliminary assessment in Dadri revealed that children could tell various domains of pre-math competency. In such a scenario during the warm up period in Dadri, as well as the first phase, activities were conducted in a systematic manner in order to strengthen understanding of these competencies and various ways of looking at its dimensions.

Pre-math concepts are delivered not only with the help of objects but also using large size charts with various pictures on them. Furthermore, teachers can have conversations with children using objects present inside the classroom such as chalk, copy, chairs, black board, wall, fans, pen, pencil and more. For instance; “What all can you see in this picture? In this picture who is standing where?”

10-12 hand made large size charts were used during the Dadri pilot, which explained the concepts up-down, more-less, light-heavy, front-back, far-near. These charts were used in rotation so that they remained cost-effective. Same set of pictures was also used in language classes as well.

In Dadri, from warm up till the end of the second phase of the intervention, pre-math activities were conducted with the help of shapes. Various kinds of activities from figure identification to finding the difference between them and then creating various pictures from figures were conducted. In every class 72 different kinds of figures were given. Children individually or in a group created pictures and presented what they created.

B. **Number Recognition**: Number related activities are done without introducing number charts initially in classrooms. Number chart displays numbers till 100, which creates confusion. Consequently, the intervention is partitioned into three slots; 1-10, 1-50 and 1-100. A prerequisite to number identification, is counting till 1-10. Teacher can use straws and rubber bands (bundle-tilli) to initiate discussions on
counting. A number of items that are present inside the classroom can be used for the purpose of discussion such as:

- What are the things that are ‘3’?
- Show me where 3 is written?
- Number games through flash cards.
- Creating bundles.
- ‘2’ bundle means how many straws?

In Dadri, from the first phase charts were introduced and with the help of the same many activities could be done:

- Acoustic counting through chart
- Resultative counting
- Skip counting
- Base ten counting

Furthermore, by the end of the third phase, majority of children could typically understand numbers from 1-100. Numbers were not understood in isolation as names and symbols only. Children knew that in spite of numbers having their names and value, they also had associated quantities. Without quantity there would be no meaning attached to a number “5” there has to be an understanding office items like currency, books, pencil. This could be obtained by applying various operations such 2+3=5, 10-5=5 and more.

Note that the entire intervention, irrespective of it being segregated into different slots, is imperative for children to do every day.

C. **Word Problem:** For understanding a question, it is important to understand the language. Generally while teaching, the focus tends to drift towards a problem solving approach neglecting the discussion on how the numbers are interwoven in a language. Keeping this in mind, throughout the warm up phase verbal discussions on word problems can be initiated with children. During trainings a lot of word problems on addition and subtraction can be given at different difficulty levels. First, in a big group word problems on addition and subtraction can be narrated to children and if easily understood, the instructor can then ask questions on the problem. For instance, “What are we supposed to do in the problem? How many xx were there before? After that what happened? Do we have more or less in number?” Moreover, the objective during the warm up phase is to focus more on the capacity to recall and retain the information given in the word problem before finding the approach towards solving the problem. When gauged that children have started paying attention to the information embedded in the problem and can find answers to the same, the instructor can in a later phase then introduce writing of algorithm to solve a problem.
In the Dadri pilot, at the start of the intervention, the Pratham team took the support of materials such as straws and bundle. But by the end of the third phase, children could solve the algorithm without the use of such materials.

Note that in the big group activity, the instructor can demonstrate how to solve a word problem on the blackboard for a couple of days, but each child solves/writes the algorithm either on the floor/wall. By adopting this approach, every child gets an opportunity and the instructor can monitor the progress of the task.

D. **Estimation:** There is a saying that young children cannot estimate, but they can guess. (For example, whether they have to find their toy or they have to count how many stairs they crossed while coming down the staircase.) This ability of guessing is taken towards approximation during the intervention.

In Dadri, the estimation skill was developed through project work where children estimated and verified their estimates. In the third phase, estimation was the center of attention. It was a transition phase where what children experienced in phase one and two was adopted to deliver the concept of approximation. In fact, in Dadri, children could tell approximate number of straws and bundle in the instructor’s hand, length of items measured from a fixed unit, results of word problem and more.

**Final Model for Numeracy:**
The Dadri pilot showed that we should:
- Expose children to real-life situations where children can relate the same to pre-math concepts and can talk about more-less, big-small etc..
- Play around with shapes, where children can explore their sides and talk about them.
- Make children recognize numbers on number chart and write on blackboard.
- Build the concept of estimation with the help of informal units such as “kadam bitta billang”.
- Help children understand word problems and their variance in number and language complexity, such that they can talk about the problems freely and solve them procedurally.
- Help children understand the reversibility of numbers and the different ways of achieving a number.
SPECIAL ACTIVITIES

A. Book Making:

Book making activities help children think logically, while also motivating them to express their views on a given topic/character, along with developing comprehension. (This was introduced in the Dadri pilot from day one of the third phase).

As part of the activity, children start creating an 8 page book on their own. Books are made on a particular topic/character/theme, with children in small groups being asked to create a story surrounding the same. The instructor encourages children to think about the topic and create story about it. To make the discussion interactive and to motivate the children to take part, the instructor moves around the small groups and asks questions (topic relevant) such as “who is the main character”, “name of the story” and “what will happen first” and “where it will happen”, and then post the discussion move to the writing part “what should be written down in the beginning and ending of the story”. After that one student from the group will write the whole story on paper. And the next day, children will then exchange their pages.

Subsequent to all this, children will then need to read and draw pictures relevant to the text written on their pages. Every small group will need to make front/cover page, collect all the pages and bind together as book.

B. Exposure Visits + Events:

When children enter a school premise, they have a prior understanding of objects and their formation from their surroundings. These activities help them in connecting objects with the real world, enhancing their interpersonal skills of sequencing, connecting, estimating and presenting their work either in groups or alone. For this purpose, exposure visits, and events related to movies, theatre and music can be conducted inside the school premises with children.

- “Chalo baahar aur bolo kya dekha” (go out and tell what you saw) is a kind of exposure visit where “asmaan se jaan pehchaan, school ki saer, mitti ki duniya etc.” (For example children move outside their classroom, sit in groups, talk/explore the sky in groups and write down their thoughts. They organize their thoughts on a chart paper and finally present it in front of the class.)

- “Chalo Naapo socho aur bolo” (measure, think and speak), is where children’s estimation concept building is fortified and introduction of informal units is delivered through “nape kitna paani, school mein kahan se kahan tak etc.” (For example children measure lengths by estimating how many steps they can walk around from their classroom to anywhere they choose inside the school premises, and then each group presents their findings through pictorial representation on a chart paper and presents it in front of the class.)
OTHER ASPECTS WHICH AFFECT LEARNING

A. Wait and Response Time: Does It Help In Learning?

*Wait! “You didn’t give me time to think!”* was Bhumi’s instant reaction, a girl of Grade I, when she was reprimanded by the teacher/instructor for an incorrect answer. This incident (which occurred during the pilot in Uttar Pradesh) made the team realize how important it was to encourage the children and give them an opportunity to think before answering a question.

Usually teachers come prepared with their set of questions and answers in the class. They ask questions from their student and without giving them time to think they give the answer the questions themselves. Frequently the teacher’s role is that of an information giver. The teacher will often ask questions only once and ignore the answers given by the students irrespective of their correctness. The result of this practice is that children get into the habit of responding immediately to a question without giving it any thought. This often happens because of the idea that students should be prepared with their answers the moment the question ends.

In such a scenario, as instructors and teachers, one needs to think whether this again to be reevaluated. Does one need to develop individuals who do not think before they act? There is a need to encourage children to think before they speak from Grade I onwards. If the foundation is strong, the structure that develops remains strong. One needs to develop this skill through classroom activities. Hence, keeping this in mind, one should be prepared before entering a classroom and while doing activities, keep in mind that it is important for the children not only understand each instruction delivered in a classroom but also think before responding to those instructions.

This capacity of thinking and responding to instruction cannot take place through rote learning. Lecturing or other activities cannot help in this regard because there is no lesson or poem written for this. Contemplating before uttering is helpful.

This habit can easily be developed in Grade I children. When children of such an age group enter school for the first time, they are totally oblivious to the school atmosphere. They know very little about the rules and regulations followed in the school premises. It is like a transition phase from known to an unknown environment where children show inquisitiveness towards the new settings.

In such a scenario, the instructor/teacher’s role is to make this transition easy from home to school. In the initial days of classroom before giving instructions for any activity, teacher should thus allow children to listen carefully and think before answering. Upon realizing this in Dadri, the team began saying “we will listen carefully and think before giving answers” before giving instruction for any activity. As a result children developed the ability of listening to instructions, whether working in groups or individually, with no one forgetting to think before answering.
B. Off Task Rate

Every day, Sharmila’s (Sharmila was a Pratham instructor) class started with songs or rhymes. She asked her students to sing a rhyme for her. In seconds many students raised their hands quietly. She asked one of the students to sing; the student stood and recited a poem and rest of the class followed her. Sharmila then began the class with a storytelling activity and asked her students to tell what all happened in the story. Several students raised their hands. When one child was speaking others would listen carefully. If children had any difference of opinion from what the others were speaking, they would frantically raise their hands. Sharmila’s class ended with games. She used to give simple instructions to children, to sit in their respective group. Three groups could be seen in few minutes. Each group was assigned certain specific tasks. Turn by turn Sharmila moved to each group and interacted with different groups of children. They interacted with their fellow partners and tried to do their assigned task. Keeping children on task got her success.

Every teacher dreams about such type of classroom where children should take learning responsibilities and are actively engaging in classroom activities. To have this kind of classroom, intensive work and planning should be done together by teacher and children.

During the pilot in Dadri, the Pratham team came up with variety of reasons for the loss of instructional time that occurred in their classroom:

- At some point children got distracted because of:
  - Interacting or looking at fellow children,
  - Looking at things present inside the classroom that were not related to the task at hand
  - Wandering in the classroom when it was not required according to the task
  - Environmental distractions: classes that were running outside the classroom, balcony or playground.

- Sometimes the loss was because of the poor planning by teacher.

Unlike other Pratham programs, categorization of learning levels of such children was not a problem because activities were conducted at a slower pace and there was less scope for peer learning. However, it was clearly visible in Grades I-II, that if the students did not understand what to do in the task assigned or found it difficult in understanding the instruction, they became disengaged and more likely to display off-task behaviour.

Keeping in mind various points mentioned above, there was a need to think of tasks that emphasize the important aspects. Every instructor not only planned the various activities given during small group work but also planned on how to support children during their task work. Before shifting from one activity to another, teachers were prepared with their learning materials such as story cards, chalks, stick and bundle. Keeping in mind the off task rate pace, the instructors never forgot conversing with children while getting prepared for the activity. Along with this instructors also had their methods for helping students with difficulties. Instructors were told that if children raised their hands from their seats, they would need
to quickly reach out to them. This consistency aroused responsibility both in teacher and children. As a result off task rate started declining. Still, to reduce off task rate, task management was imperative. For this, training of teachers was conducted on following criteria:

- **Task allocation:** Understanding the cognitive demand of the task.
- **Task management:** Understanding the cognitive demand of the task according to the objective determined.
- **On side support:** Doing the task at hand should be replaced with the facilitation by the teacher.
- **Clarity of objective:** while handling the task at hand, the teacher should be clear with the progression of the objective in an appropriate manner.

Children were consistently engaged using various teaching styles. The instructors were encouraged to incorporate small-large group work activities or paired activities that kept children engaged. Class arrangement was designed to be such that attention could be paid to every other child. Close proximity of teacher and children proved to be a quick and easy intervention. Instructors could keep a check on students to know what they were capable of and how much they had progressed in their assigned work. Off-task behaviors were common during wait times, as students were oblivious about how to further work on the assigned task.

Sharmila, one of the team members part of the pilot in Dadri taught language in Grades I-II in government primary school Rasulpur Dasna. The students had been in her class since September 2013. Towards the end of the intervention, they were well organized students who were ready to take on the responsibility of learning. However, Sharmila’s class had not always been like this. It happened after a lot of patience, hard work and it took Sharmila a long time to get her students to pay attention. Initially, children were distracted, not attentive, had short attention span, and were not familiar with what school and class expects from them. However, later students were attentive and engaged in class room activities, they knew how to work in small groups. They had accepted responsibility for their classroom environment.
C. Classroom Management in Grades I-II

Classroom management is one of the most important factors contributing to successful teaching and learning. It caters to a wide variety of skills and techniques used by teachers to keep students attentive, organized, on task, and focused towards learning during a class. For effective classroom management, teachers should create positive interaction strategies and demonstrate positive behavior. They should always be clear about what their students are capable of and always try to involve them in learning activities, under the guidelines of underlined the classrooms’ rules.

The scenario dates back to August 2013. One of the school’s teachers Seema was handling students of Grade I and II. Both classes were sitting together. She instructed the class saying “Draw anything like an umbrella, fish, elephant etc.. Color it and then show it to me.” The teacher started drawing a top, mango, and sun, asked the children to copy from board. Few children, who were confused, came with their notebooks and asked “teacher! What should I draw?” Teacher replied “I don’t know, draw anything you feel like. Another child came and showed his copy/notebook. She lost her patience and send angrily, “What are you doing? What is this (while pointing at the notebook)? Go and sit.” A voice came from one end of the room ”I don’t have a pencil”. Teacher responded with agitation ”Why should I bring pencil for everyone? Carry your own pencil.” There was total chaos in the classroom. Children were found fighting with each other instead of doing their class work. Few children ran away from the class room without asking the teacher. None of the children were paying attention or were focused. How could they pay attention, when they actually didn’t know the meaning of paying attention towards a classroom task?

From the situation above, it is visible that both the teacher and students cannot create a learning rich environment and children’s attention span is often quite low. There was a clear need to have to find a strategy to ensure that classroom is managed effectively and efficiently. However effective classroom management is not an easy task and certain rules and strategies have had to be developed for implementation in classrooms.

Over the course of the intervention, children in Grades I-II reach different levels of reading development in their respective classrooms. Some start to read, while others lack even the most basic knowledge of letters and sounds. Recognizing this, instructors need to group children according to their needs.

In Dadri, during the drill and practice time children were divided into three or more groups, which the teacher took turns in teaching. The main problem with this strategy was that it required activities which children could do on their own while the teacher was working with another group. So there was a need to keep different types of reading and activity material for children in the reading corner. Thereafter, after completing their assigned work in groups, children were encouraged to read as many books as possible. This was a follow-up period, spent on other activities closely linked to instructional objectives; however teachers carefully reviewed their work, to check that activities were productive.
D. Learning from Classroom Management Strategies

Continuously and closely working with Grade I-II children, helped the team understand that classroom management could be effective by combining various rules and strategies. The following has been found to be essential for effective classroom management.

- **Behavior**: Positive attitude, happy facial expressions, encouraging statements, everyone respecting each other and fair treatment to students.
- **Environment**: Print rich, welcoming classroom with variety of learning materials that are organized to support specific learning activities.
- **Expectations**: The quality of work that teacher expects the students to do or give after participation in class/activity.
- **Materials**: Variety of texts, picture cards and other learning material that teachers use for effective learning.
- **Activities**: Types of learning activities that teacher plans to engage children with or hold their interest/natural curiosity for which the topic should be tangent.

In Dadri, the strategy was translated into the following activities:

- On the first day of the class, rules were established and enforced constantly. For instance, children had to ask for permission before entry or exit from the classroom, raise hands, wait for their turn and listen carefully when somebody is speaking.
- The teacher drew the attention of every student before starting any activity in the class.
- They gave responsibility to students, a step towards making them self-learners. For example; through interaction with children the instructor constantly asked, “who has still not kept their story books,” “how do we sit in class room” or “come here and help me to arrange library corner”.
- Small groups were formed from day one and the teacher facilitated their learning.
- Teacher used clear instructions and had clear expectations from the students.
- The teacher organized and created daily lesson plans for the class.
- The teacher demonstrated positive attitude and used positive language in front of young children.
- The teacher always appreciated good behavior- “Dekho ! Priyanshu kitni jaldi apne group me baith gai” (Look! Priyanshu sat so quickly in his group.) or “usne kaam shuru bhi kar diya” (He has started his work already.) etc.
- Once students were engaged in their task, the teacher gave extra help to children who needed extra support or time.
- Teaching was interactive and involved two way communication.
After finishing off assembly in the school ground, Grade I-II children entered their classroom, sat in a semicircle and started playing with their fellow mates. The Pratham instructor arranged books in her library corner with the help of few children. After setting up the library corner, she was ready to conduct her language class. She picked the up the material needed, sat in a semicircle (on floor/ benches) and the class started. **Within a month, most of the children started paying attention and followed instructions in all the classes.**

While one cannot claim that above cited activities or strategies are the only way to manage a class effectively, focusing the instructor’s managerial role in their respective classes turned out to be an effective approach. Ensuring this, it was found that children paid attention and participated in classroom activities while following the expected group etiquette.
OTHER APPLICATIONS OF APPROACH

Based on the pilot in Dadri, another pilot is currently ongoing in Allahabad, Uttar Pradesh at the time of writing. Furthermore, learnings from this approach have helped shape both direct and partnership interventions in Uttar Pradesh and elsewhere.

In West Bengal, UNICEF and the Government of West Bengal partnered in 2015 to strengthen Early Grade Reading and Numeracy (EGRaN) across the state. As part of this partnership, a teaching-learning package was developed that aimed to provide special focus on developing reading and numeracy skills for children in Grade I-II across the state. Pratham as the technical partner to UNICEF for this program developed the EGRaN package, which was implemented in 22,000 schools across 19 districts. In addition, Pratham was the implementation partner for Malda district – that was adopted as a demonstration district for the EGRaN program. In Malda, the Pratham team – with the support of UNICEF – worked closely with teachers, to provide on-site support to schools and ensure proper implementation of the program.

As mentioned previously, the intervention built upon the learnings from Dadri, with some of the key differences being:

- It was implemented by government school teachers themselves
- It made use of textbooks available in schools
CASE STUDIES

Below are a couple of case studies from the pilot in Dadri:

**Prashant**, a bright eyed naughty little boy was a student of Grade I. Two months after his enrolment i.e. towards the end of August, he could not identify letters. Initially, he didn’t like to participate in any of the activities in the classroom. The teacher consistently encouraged and motivated him to speak. The results finally started showing around the beginning of October. Prashant started participating more and more verbally. Given an opportunity to read, he always raised his hand and fluently read the text. But in reality, he wasn’t really reading – rather guessing words from context or from discussions around the text. However, by the end of February, Prashant started reading fluently and writing stories on his own. He began to enjoy reading and writing. His reading skill may be assessed by any tool, but he had learnt many other things that cannot be assessed. Like Prashant, there were many more children who started reading and writing during this project.

**Kavita**, a student of Grade II in primary school, Khurshadpura had 6 sisters and 2 brothers in her family. Her father worked in a private company, while she was scared of her step mother. The financial condition of her family was poor, with children being made to stay back from school to work in the farm. There was no appropriate material or environment to study at home.

Amidst this, the R&D classes began in her school. During the baseline assessment, Kavita was very untidy, with a runny nose. She was scared during the process but somehow managed to finish her Language and Math testing. She was found to be at the beginner level. However, after the school readiness class, she along with the rest of the children seemed less scared. Kavita who was always sad and quiet began participating in all class activities. During a home visit, her father was explained that she has shown interest in studies and should not be stopped. She understood all Math based activities very quickly and exhibited special interest in the subject. Whether it was counting through ‘bundle tili’ or games or addition and subtraction, she did well. She tried word problems and answered them using proper reasoning. Seeing her interest, we developed it further and it showed results. One day Kavita’s father took out time to come and meet us and told us that Kavita had started counting everything in the house. She would keep adding or subtracting and then ask her parents if her answer was correct. One day she was mumbling in her dream “3 bundle, 4 bundle”. Her father said that he did not understand what she was talking about but he is confident that it was helping her.

By the end of the intervention, Kavita was able to recognize numbers as well as add and subtract them. While the team had left the school, Kavita’s learning had only just begun.