
ASER Centre – New Delhi

ASER ASSESSMENT and SURVEY FRAMEWORK

ANNUAL STATUS OF EDUCATION REPORT

This document is an official intellectual property of ASER Centre. It is a compilation of factual data and information of ASER survey and assessment across the years, since 2005 to 2014. The document captures the overview, process, purpose and framework of ASER.

Some of the chapters have been compiled, extracted from various ASER reports and the ASER official website and some other chapters are authored by Mr. Ashok Mutum and Dr. Aditi Banerjee.

There is an inclusion of ASER tools and technical writing pieces on ASER in the annexure for further elaboration and details. These have been authored by Dr. Rukmini Banerjee, Savitri Bobde and Shafer Banu Vagh.

Contents

1. Overview - Information and background about ASER	4
1.1 History of ASER.....	4
1.2 Some of the initiatives in India for system monitoring in education.....	5
1.3 Establishment of ASER Centre	5
1.4 ASER Centre’s Mission and Vision.....	6
1.5 Objectives of ASER	6
2. ASER Study – A Quick Overview.....	7
2.1 Authentic Data	8
2.2 ASER as a Household Survey	8
2.3 Meaning of the term ASER.....	8
2.4 Model of ASER Study.....	9
2.5 Other Similar Assessments – EGRA and EGMA.....	10
3. Some linkage with the National framework	11
3.1 ASER Reading Assessment and NCF	11
3.2 ASER - The common competency assessment – Languages and Arithmetic.....	12
3.3 ASER Arithmetic assessment and NCF	13
4. What is the methodology for ASER Sampling, survey and reporting	14
4.1 The ASER sampling.....	14
4.2 Sample size.....	15
4.3 ASER and district level estimates	15
4.4 ASER and selection of villages and households	16
4.5 Confidentiality of the sample.....	17
4.6 Survey implementation.....	17
4.7 Reporting results.....	18
4.8 The outcomes of these assessments and survey.....	18

ASER ASSESSMENT AND SURVEY FRAMEWORK

4.9 Build capacity to generate and analyze evidence.....	19
5. Relevance of ASER tools being a floor level tool.....	22
6. The framework of ASER Reading and Arithmetic tools.....	24
6.1 Curriculum mapping done for ASER.....	25
6.2 The concept of reading and its levels – ASER	26
6.3 The reading tool	26
6.4 Development of the reading tool.....	27
6.5 The scoring system for Reading tool.....	28
6.6 ASER Reading levels	29
Figure 2 – ASER Reading Levels.....	29
6.7 The Process of ASER Reading assessment	30
6.8 The concept of Arithmetic and its levels – ASER.....	31
6.9 The Arithmetic Tool	31
6.10 Development of the Arithmetic tool.....	31
6.11 The scoring system for Arithmetic tool.....	32
6.12 ASER Arithmetic levels	33
6.13 ASER Arithmetic assessment process	34
7. Amendments in due course of years in the ASER reading and arithmetic tools	35
8. Other Bonus Tools.....	37
9. Key principals and guidelines for all stakeholders of ASER.....	38

ASER ASSESSMENT FRAMEWORK

1. Overview - Information and background about ASER

1.1 History of ASER

Beginning in 1996, Pratham a non-government organisation started focussed work with helping children master basic skills in reading and arithmetic in the urban slums of Mumbai, and then slowly spread its work across many more cities/town and thousands of villages across India. Quite early in its history, Pratham developed a simple tool to enable its staff across the country to assess children's progress in reading using a common metric. This tool consisted of a single sheet of paper with four levels of text: letters; simple, common words; a short paragraph consisting of four easy sentences; and a longer text containing slightly more complex vocabulary. Extensive use of this tool across the Pratham network provided a common framework and a common vocabulary which the organization could use to assess whether it was achieving its goals and to share learning's from different parts of the country.

In 2004, the new UPA government came into power with a promise of focusing on outcomes over outlays. The 2% education cess was introduced the same year. By 2004, enrollment levels in primary school in India were already more than 90% - the country was well on its way towards achieving universal enrollment. But no information was available on scale about the outcomes of primary education. Were children actually learning? Pratham's long experience of working with children suggested that although children were in school, they were not learning well. And so the idea of the Annual Status of Education Report (ASER) was born: an annual, nationwide survey of children's ability to read simple text and do basic arithmetic that would engage ordinary citizens in finding out whether their children were learning. The tool used by Pratham for many years became what is now known as the ASER reading tool and a similar assessment was developed for arithmetic. Partner organizations in every rural district were contacted and the first ASER survey went into the field in late 2005.

ASER has been conducted every year since 2005. This enormous annual task engages citizens across the country in understanding and tracking children's ability to read and do basic arithmetic via the

participation of local organizations and institutions in every rural district in the country. It is the largest household survey of children conducted in India by citizens' groups, carried out by more than 25,000 volunteers and covering over 700,000 children in 15,000 villages each year. It is also the only annual source of information regarding learning levels of children available in India today.

1.2 Some of the initiatives in India for system monitoring in education

Over the past decade there have been very few large scale-nationwide studies which set out to measure the quality of elementary education, on a regular basis. Apart from the *National Achievement Survey (NAS)* conducted by NCERT for selected grades, the *Annual Status of Education Rural Report (ASER)* has been repeatedly measuring the status of enrollment and quality of fundamentals of learning every year, since the year 2005. Other significant studies which include the *Students Learning Study & QES study* conducted by EI & WIPRO respectively, but these studies are one-time studies and are not repeated.

1.3 Establishment of ASER Centre

Since there was an urgent need to take stock of the status of the quality of elementary education and understand the nature of progress over a period of time, there was also need to come up with a process which would be able to answer some of the following basic questions.

- The lack of information on outcomes and how these can lead to action. Metrics and mechanisms have to be generated to see if the allocated resources are adequate, whether they are being applied well and how outlays are translating into outcomes.
- There is an overall public perception that government delivery of services cannot be improved. There is also limited awareness of the fact that government programs are actually funded by tax payer money. Thus the demand for improved quality is low. However, unless people and (in the case of schools) parents demand better services, quality is unlikely to improve regardless of government provisioning. Despite dissatisfaction with the current state of affairs, it is relatively rare to see citizens organizing themselves on scale for assessment and action.
- The lack of a culture of measurement and analysis especially with respect to outcomes. Whether within the government or otherwise, the practice of using evidence to formulate plans and to take stock of progress is rare.

- There was widespread need for basic capacity building with respect to the nuts and bolts of measurement, evidence and analysis especially at the district and even at the state level, where key decisions are taken.

ASER Centre was established in January 2008 as a specialized, independent unit within the Pratham network, in order to institutionalize and strengthen the design and process of ASER and ASER-like initiatives. It works towards providing answers to a key question: Are social sector programs leading to desired outcomes?

1.4 ASER Centre's Mission and Vision

Mission statement: "Measure to understand, understand to communicate and communicate to change"

ASER Centre generates evidence for action. It focuses on outcomes and processes in education and other social sectors. It builds the capacity of individuals and institutions to measure at scale, understand, communicate and act upon the findings of assessments and research, with the objective of improving the quality of social sector programs. It aims to create a culture where rigorous measurement of outcomes is integral to action, thus bridging the gap between theory and practice, assumption and reality.

Vision statement: "Evidence for Action"

When ordinary people are empowered with knowledge, they can bring about extraordinary change. Measurement, which is critical to generating knowledge, has been an exclusive domain of experts. We believe that measurement needs to be rigorous, but easy to understand and to act upon. When ordinary people learn to measure what affects their lives, they can communicate with each other across villages, states, nations, and continents, to identify and understand their problems, take steps to resolve them, and change the world for the better.

1.5 Objectives of ASER

- To conduct a yearly household-based assessment on basic learning outcomes, so as to include all children (in rural areas) of age 6 to 14.
- To do an assessment of basic reading and arithmetic, by using the tools that are not based on grade level objectives and competencies rather the tools that are easy to administer and simple to understand.
- To involve the community and citizens, and not necessarily experts, in conducting the assessment by building their capacity.

- To construct a report that tells about the annual status of education in rural India by providing evidence based estimates at district and national levels, so as to facilitate policy and practice based on the information about learning levels of children in rural areas.

2. ASER Study – A Quick Overview

ASER is an annual study that aims to provide reliable annual estimates of children’s enrollment and basic learning levels for each district and state in India. ASER has been conducted every year since 2005 in all rural districts of India. It is the largest citizen-led survey in India. ASER is also the only annual source of information on children’s learning outcomes available in India today.

Unlike most other large-scale learning assessments, ASER is a household-based rather than school-based survey. This design enables all children to be included – those who have never been to school or have dropped out, as well as those who are in government schools, private schools, religious schools or anywhere else.

In each rural district, 30 villages are sampled. In each village, 20 randomly selected households are surveyed. This process generates a total of 600 households per district, or about 3,00, 000 households for the country as a whole. Approximately 7,00,000 children in the age group 3-16 who are resident in these households are surveyed.

Information on schooling status is collected for all children in the age group 3-16 living in the sampled households. Children in the age group 5-16 are tested in basic reading and basic arithmetic. The same test is administered to all children. The highest level of reading tested corresponds to what is expected in Std 2 and the highest level of arithmetic tested corresponds to what is expected in Std 3 or 4 (varies from state to state). Every year, some additional tests are also administered and these vary from year to year. In addition, basic household information is collected every year. In recent years this has included household size, parental education, and some information on household assets.

In 2005, 2007, and every year since 2009, ASER has included a visit to one government primary school in each sampled village. Basic information is collected on school infrastructure, enrollment, attendance, teachers and fund flows. Since 2010, ASER tracks few of the norms and standards under the Right to Free and Compulsory Education Act (RTE).

ASER tools and procedures are designed by ASER Centre, the research and assessment arm of Pratham. The survey itself is coordinated by ASER Centre and facilitated by the Pratham in states where Pratham has a presence. The study is conducted by close to 30,000 volunteers from partner organizations in each district. Different institution partner with ASER, viz. colleges, universities, NGOs, youth groups, women's organizations, self help groups and others.

2.1 Authentic Data

There are three key processes that goes to ensure the data quality. Firstly, the surveyors undergo a rigorous training, where practicing the administration of the study in the field is a significant portion. Then, in every district at least 30% of villages are monitored during data collection phase. Finally, through a stringent rechecking mechanism, at least 4 randomly selected villages are rechecked to find out if there are any errors. These processes are intensively reviewed and improved upon each year.

2.2 ASER as a Household Survey

ASER as a study aims to get estimates at the district and state level, about the enrollment and status of fundamental learning outcomes of children in the age group of 3 to 16 years. Collecting this information would have not been possible in the schools, as it would limit the scope of the study by not covering children who are not in the school net. Also one will easily find children going to different types of school. In addition to this, when testing is conducted at the household/community level then the process of testing does not happen in isolation and a certain degree of accountability of parents/community is achieved, which is a very important stakeholder that cannot be discounted if progress has to be attained.

2.3 Meaning of the term ASER

The word ASER means '*impact*' in Hindustani. If development programs are to lead to desired outcomes, their impact on the ground needs to be regularly assessed. ASER Centre seeks to use simple yet rigorous methods to generate evidence on scale on the outcomes of social sector programs. It also aims to strengthen the link between evidence and action by building the capacity of individuals and institutions to design, conduct, and understand assessments that focus on key outcome indicators. Large sums of money are channelled into social sector programs: education, health, nutrition, and livelihoods, among others. Lack of information on how these investments

translate into outcomes on the ground is a major barrier to evaluating their effectiveness and determining whether taxpayers’ money is being well spent. The ASER Centre approach has its roots in Pratham's work across urban and rural India to help children acquire basic skills in reading and arithmetic. ASER Centre was established as an autonomous unit within the Pratham network in 2008.

2.4 Model of ASER Study

ASER model has four major components. The study collects information regarding enrollment, if children (3 to 16 years) are in school or not? If they are, then what type of school are they attending? Children of the age group 5 to 16 years are tested, if they are able to read and do basic arithmetic. Every year, we also collect information on basic household indicators. Apart from this, we observe the status of basic facilities available in the government schools.

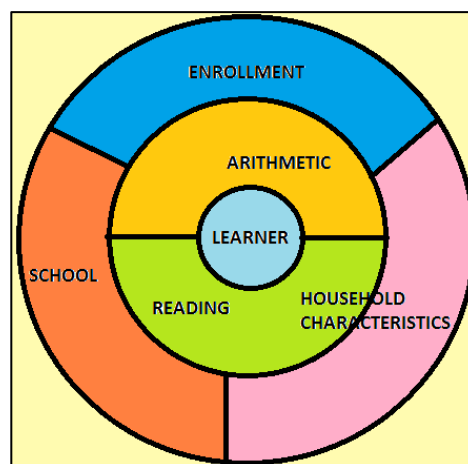


Figure 1 – ASER Model

Given below is a table which describes the items that were covered as part of the ASER study over the years.

PARTICULARS		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Enrollment	Out of school	Yes									
	Never Enrolled										
	Types of Schooling										
Learning Outcomes	Basic Reading										
	Basic Arithmetic										
	Writing	Yes									
	Reading in English	No									
	Comprehension	No									
	Application based Arithmetic items	No									
	Money tasks	No									
	Questions on Time	No									
General Knowledge	No										
Household	Basic Household Indicators	Type of house, availability of newspaper, TV, Cable, Newspaper, Reading materials, etc									

	Education Indicators	Education Qualification of Mothers & Fathers, Computer literacy of family members, Child's private tuition status, etc										
	Testing of Mothers	Mothers were tested in basic reading and ability to use a mobile phone										
School Facilities	School Infrastructure											
	Funds											

Table 1 – ASER Variables

2.5 Other Similar Assessments – EGRA and EGMA

USAID household surveys cover topics such as the age of enrolling children in school and dropout, reasons for over-age first-time enrollment in school, reasons for never enrolling in school, and the frequency of and reasons for pupil and student absenteeism. Additionally, household surveys obtain information on household expenditures on schooling and other contributions to schooling; distances and travel times to schools; and parent’s/guardians’ perceptions of school quality and the benefits and disadvantages of schooling. Finally, education household surveys also include a very basic literacy assessment. The Early Grade Reading Assessment (EGRA) is an oral student assessment designed to measure the most basic foundation skills for literacy acquisition in the early grades: recognizing letters, reading simple words, sentences and paragraphs, and listening comprehension.

EdData II developed the EGRA methodology and has applied it in 11 countries and 19 languages. It has been adopted and used by other implementing partners in more than 30 other countries and more than 60 other languages. Data from EGRA have been used for feedback on teacher practice in rigorous but easy-to-understand ways. Many countries have shown an interest in using it as a springboard to improve reading, and have gone on to redesign their teacher training around reading.

The Early Grade Arithmetic Assessment (EGMA) is an oral assessment designed to measure a student's foundation skills in numeracy and Arithmetic in the early grades, including number identification, quantity discrimination, missing-number identification, word problem solving, addition and subtraction, shape recognition, and pattern extension. These skills assist in building the

Arithmetic foundation that is needed for students to accomplish further tasks, such as retrieving information from graphs, as well as other measurement tasks.

Ed Data II developed the EGMA methodology and has applied it in 4 countries and 6 languages. It has been adopted and used by other implementing partners in seven other countries and five other languages. EGMA has informed the design of training and materials packages to improve early grade Arithmetic instruction.

3. Some linkage with the National framework

The National Curriculum Framework (NCF), latest updated as in records 2005 is the guiding framework to develop school curriculum in India. ASER somehow tries to match up its work with the NCF statements.

3.1 ASER Reading Assessment and NCF

- 1) **Involvement of Society in linguistic development** - The NCF document defines language as “All specific linguistic development is, of course, socio-culturally mediated, and every individual successfully creates a repertoire of multiple registers to negotiate a variety of social encounters. Aser involves society by household surveys to make parents and the society involved in the process of student learning. This is an enthusiastic process where parents and society is keen to understand the student progress and the real situation in terms of leaning progression.
- 2) **Multi language assessment for reading** – The NCF document states In a country like India, most children arrive in schools with multilingual competence and begin to drop out of the school system because, in addition to several other reasons, the language of the school fails to relate to the languages of their homes and neighbourhoods. Most children leave schools with dismal levels of language proficiency in reading comprehension and writing skills, even in their own native languages. Language consists of much more than just poems, essays, and stories; unwillingness to accept the role of languages of the home and neighbourhood in cognitive growth and failure to notice that cognitively advanced language proficiency tends to get transferred across languages. It is becoming increasingly clear that linguistic diversity is as important for our survival as biodiversity. It is imperative that we make provisions for education in the mother tongue(s) of the children and train teachers to maximise the utilisation of the multilingual situation often obtaining in the classroom as a resource. Recent research has

demonstrated the positive correlation between multilingual language proficiency and academic achievement. It has also shown that multilingualism leads to greater cognitive flexibility and social tolerance. Aser tries to use simple jargon free tools built in the order of developmental continuum progression which are easy to use and provide instant results. The reading tools are made in the regional language for Hindi speaking and non Hindi speaking areas. The tools are administered in an anxiety free situation. This enables to make society and students understand the fact that poor performance in other academic area might be severely correlated to the fact that the child is not yet compatible to the language. When he doesn't understand the language then understanding heavy text loads or utilizing other higher order cognitive skills might be a distant dream. There could be a simple possibility of drop outs due to this reason as well.

- 3) **Common competency assessment in Language** - The NCF document states when we are speaking, we are also simultaneously listening and when we are writing, we are also reading in a variety of ways. And then there are many situations (for example, friends reading a play together and taking notes for its production) in which all the skills in conjunction with a variety of other cognitive abilities are used together. ASER tools in reading and arithmetic focus on the intent of assessing whether a student can read alphabets, words, paragraph and story. Whether the student can solve basic arithmetic problems of number recognition, subtraction and division. The student has to listen to the instruction, read and speak aloud as per his ability, read and write for the arithmetic problem solving.

3.2 ASER - The common competency assessment – Languages and Arithmetic

Given the above mentioned points about language competencies the ASER tools have been stipulated in a way over the years that they cater to the need of assessing listening speaking reading and writing competencies.

In the language tool one has to listen to the instructions, read and then speak out what has been read. Bonus tools of ASER engage people in writing as well. In the arithmetic tool one has to listen to the instructions, read the questions, either speak up the numbers recognized or write the answers as per his competency.

Competency	Reading	Arithmetic
Listening	√	√
Speaking	√	√
Reading	√	√
Writing	√ (in selected years, as bonus tools)	X

Table 2 – Competencies captured by ASER

3.3 ASER Arithmetic assessment and NCF

- 1) **Utilizing one skill to solve other problem** - The main goal of Arithmetic education in any school is to improve upon the skill of problem-solving and pursuing assumptions to logical conclusions. There are many ways of thinking, and the kind of thinking one learns in Arithmetic is an ability to handle abstractions, and an approach to problem solving. ASER tools are made in a way that if a child knows addition then only he will be able to solve the problem of subtraction with borrowing. Similarly if the child knows multiplication and tables then only he can solve the Division problems.
- 2) **Strong foundation and assessment of basics** - The NCF advocates strong foundation of Arithmetic is essential at the elementary stage as it would help children prepare for the challenges they face further in life. When it comes to curricular choices, we recommend moving away from the current structure of tall and spindly education (where one concept builds on another, culminating in university Arithmetic), to a broader and well-rounded structure, with many topics “closer to the ground”. Moreover, we suggest a principle of postponement: in general, if a theme can be offered with better motivation and applications at a later stage, wait for introducing it at that stage, rather than go for technical preparation without due motivation. Generally in Arithmetic a student starts learning about number systems (numeracy and its operations), followed by more advanced stage of mathematics, viz, algebra, measurement & geometry, data representation to further higher and deeper cognitive level learning in Arithmetic. The ASER Arithmetic test is focussed on the initial stages of number systems - number recognition and number operations (subtraction and division). If a child is able to get through these basics then only it makes sense to teach him further technicalities of the subject.

4. What is the methodology for ASER Sampling, survey and reporting

4.1 The ASER sampling

The ASER sampling strategy was designed in consultation with experts at the Indian Statistical Institute, New Delhi. Inputs were also received from experts at the Planning Commission of India and the National Sample Survey Organization (NSSO).

The ASER survey generates estimates of schooling and basic learning status for ALL children in rural India in the age group 5-16. This includes children enrolled in different types of schools (government, private, and other kinds) as well as children not currently enrolled in school.

The first problem with school-based testing is that there is no complete list of all schools in the country. In particular, there are many low-cost private schools which are not found on any official list. Without a complete list of all schools, it is not possible to select an unbiased sample of schools. The second problem with school-based testing is that not all children are in school. Some have dropped out of school, others are absent from school on the day of the survey, and some have never been enrolled. Testing in school would mean that these children would not be included.

ASER tests children at home so as to include all these different kinds of children. Household based testing is the only way to ensure that ALL children are included. In the Indian context, it is not possible to do this if testing is done in school.

ASER is done only in rural areas. Although it has not been done so far, with additional research and resources, an urban ASER can be attempted. There are several areas in which additional preparatory work needs to be done on methodology and measures. First, more research is needed on the appropriate sampling methodology for urban areas (these would include mega cities, metros as well as district and block towns), including the question of where to draw a sample from. In the case of rural India, the Census village directory provides a complete list of all villages in the country. This provides the sampling frame for ASER (the official 'master list' from which a sample of villages is drawn). But in the case of urban India, populations are less stable, and therefore city-level 'master lists' of possible sampling units are often less reliable. For example, they may exclude unrecognized slums and homeless persons. This means that sampling may be biased and may exclude the most

marginalized populations – precisely those populations where children’s learning is likely to be poorest.

More work also needs to be done to develop tools that assess higher levels of learning. The current ASER tools are ‘floor’ assessments of basic reading and arithmetic. Testing such basic levels of mastery may not be useful in urban contexts, where the number and variety of schooling options is far greater, children stay in school longer, and children’s acquisition of early reading and arithmetic abilities is likely to be higher. The use of higher level tools may in turn require a different implementation strategy, since testing will require more time and more skill.

Finally, there is the issue of what to do with the urban report and how to fit the evidence into a policy and planning process and how it can lead to action. For rural areas, ASER information can be integrated into the annual planning process at the district and state levels. Urban planning especially for elementary education is not as straightforward especially for urban locations with diverse governance structures.

4.2 Sample size

ASER aims to generate district level estimates of children’s schooling status, basic reading and arithmetic. Each year, ASER reaches close to 570 rural districts. In each district, 30 villages are selected and in each sampled village, 20 households are randomly selected. This gives a total of $30 \times 20 = 600$ households in each rural district. Depending on the exact number of districts surveyed, a total of between 320,000 and 350,000 households across the country are sampled for each year’s ASER. In every surveyed household, all children in the age group 3-16 are surveyed and children age 5-16 are tested in basic reading and arithmetic. A total of between 600,000 and 700,000 children are surveyed each year.

The NSS Survey conducted by the Government of India’s National Sample Survey Organization is the main source of official data for estimating poverty, employment and for other socioeconomic indicators. The ASER sample of villages is about twice as large as the NSS sample for rural India. In 2009, the NSS Employment Survey was done in 7,512 villages across India with 8 households per village. In contrast, ASER 2013 surveyed 15,941 villages with 20 households per village.

4.3 ASER and district level estimates

Most official statistics in India produce estimates only at the state and national level. Even poverty estimates in India, obtained from the National Sample Survey Organization, are available only at state or regional level, not at district level. However, planning and allocation of resources is often done at the district level. For example, in elementary education, annual work plans are made at the district level. While information for enrollment, access and inputs is available annually for each district, estimates of children's learning are neither available at the district level, nor are they available annually. For these reasons ASER aims to provide learning estimates at district level each year.¹

The sampling strategy used enables ASER to generate a representative picture of each district. All rural districts are surveyed in ASER each year. The estimates obtained are then aggregated (using appropriate weights) to the state and all-India levels. The sample size is 600 households per district.

4.4 ASER and selection of villages and households

In each district, villages are randomly selected using the village directory of the 2001 Census.² Since villages vary by population, sampling is done using the PPS (Probability Proportional to Size) sampling technique. PPS gives every household in the district an equal chance of being selected.

In each year's ASER, the 30 villages surveyed in a district comprise 10 villages from the previous year's survey, 10 more from two years ago, and 10 new villages selected from the Census village directory using PPS. The 20 old villages and 10 new villages give us what is known as a "rotating panel" of villages, which generates more precise estimates of change. Having a rotating panel of villages means that every year some old and some new villages are included, which ensures that there is both continuity and change in the sample from previous years.

Every year ASER Centre generates the ASER village list from the village directory of the Census 2001. This village list is final. This is to maintain randomness of the sample, which is important in order to obtain reliable estimates. However, every year there are certain situations where replacement villages are required, such as when a village is affected by floods or other natural disasters, or if it has been reclassified as a town. In such cases, ASER Centre provides the name of a replacement village.

¹ ASER district level estimates for each year are available on the ASER Centre website (www.asercentre.org). Estimates are also produced at the divisional level (a division is a group of districts within a state, thus divisional estimates are at a level of aggregation between district and state level). Divisional estimates are published in the ASER report.

² From Census 2011, the village directory with block identifiers and household population is not yet in the public domain.

4.5 Confidentiality of the sample

This information is not in the public domain: the ASER village list is confidential and is not shared with anyone. In all large-scale surveys and research studies, it is standard practice to maintain the confidentiality of respondents. This means that any information that could enable someone to identify particular individuals, households, or villages is removed. This includes village names, respondent names, and so on.

4.6 Survey implementation

A core team at ASER Centre, Delhi designs and develops the various processes and survey formats to be implemented while conducting the survey, ASER Centre holds a National Workshop, which officially marks the beginning of the survey. During the National Workshop, the entire ASER state teams from various states gets together to analyze and practice all the training methods and the tools during the course of five days. This entails preparing all the members for conducting the state level trainings and district level trainings and making them understand the survey methodology, the implementation of various procedures and processes thoroughly through presentations, role play, mock training sessions and quiz. The survey calendar and the logistics for each state are also planned during this period. The National Workshop is followed by the ASER state team conducting a state level training in their respective states which comprises of a similar schedule of training the Masters Trainers. Each state team hires Master Trainers for the duration of the survey, to conduct the survey in the districts. Two Master Trainers are trained per district who in turn train the volunteers conducting the survey in the selected 30 villages in each district. After the state level training, the Master Trainers conduct a 2-3 day district level training³ in their respective districts where the volunteers are trained on the survey methodology and procedure. The volunteers are recruited from various types of agencies like Non-Government Organisations, colleges, government institutes like District Institutes of Education and Training (DIETs)⁴. The volunteers are assessed on their knowledge of content-both in the classroom and the field.

Two trained volunteers conduct the survey in each allotted village. The volunteers begin the survey by drawing a map of the village after talking to the village sarpanch. The 20 houses that are going to

³ Number of days the training is held depends on whether the training is residential or non-residential

⁴ For further details on partner organisations which provide volunteers, please read '1,902 ASER partners' on http://img.asercentre.org/docs/Publications/ASER%20Reports/ASER_2011/Articles/suman_bhattacharjea.pdf

be surveyed are selected through a randomization process⁵. The volunteers then survey the government school in the village to collect basic information on enrollment, attendance and few RTE indicators. The 20 households are visited and children between the age group of 3-16 years are surveyed and the children between the ages of 5 and 16 from these households are tested in basic reading and basic arithmetic. The ASER team members and the Master Trainers monitor selected villages when the survey is being conducted, based on the volunteers' performance during the training, distance of the village from the district headquarters and other such indicators. After the survey, there is an exhaustive recheck where all the survey booklets are checked, phone calls are made to the members of the household for cross checking. Based on this, the ASER team members and the Master Trainers travel to the villages and conduct a field recheck. ASER Centre also holds an ASER Centre Recheck where each state's team members are sent to other states to check the quality of the survey. The villages with incorrect data are resurveyed. After these processes are completed, is the data entered.

4.7 Reporting results

The results of ASER are released every year after the completion of survey, re – checking, data entry, re - checking, data cleaning and analysis, report writing. It is a public release of the findings and the report is document on the website for public reference.

4.8 The outcomes of these assessments and survey

Domain	Assessment level or conceptual area	Process of assessment	Type of questions	Learning outcome or survey outcome
Enrollments	Concept of evidence collection for correlated studies	Questionnaire - Ask	Tick mark / open ended	Information about number of enrollments
Household characteristics	Concept of evidence collection for correlated studies	Questionnaire - Observe	Tick mark / open ended	Information about the student's household
Schools	Concept of	Questionnaire – Ask and	Tick mark / open	Information about

⁵ To read more about the process please visit www.asercentre.org and see the full report of any of the ASER reports (in the 'About the survey' section).

	evidence collection for correlated studies	observe	ended	the schools and the norms fulfilled
Reading	Assessment of Basic reading ability	The assessor tells the student to read a Paragraph and then as per the response the assessor moves the student upwards or downwards on the levels of assessment	Oral assessment	The students are assessed on reading levels and information is derived out of the data gathered about the percentage of students in different levels of proficiency in the reading tool.
Arithmetic	Assessment of Basic arithmetic	The assessor tells the student to solve a subtraction problem and then as per the response the assessor moves the student upwards or downwards on the levels of assessment	Oral and written assessment	The students are assessed on arithmetic levels and information is derived out of the data gathered about the percentage of students in different levels of proficiency in the arithmetic tool.

Table 3 – Outcomes of the ASER survey and Assessment

4.9 Build capacity to generate and analyze evidence

The lack of a culture of decision making based on evidence was a key factor behind the establishment of ASER Centre in 2008. For the first two years of its existence, the organization experimented with different types of capacity building materials, processes and methods aimed at its own staff. Building on this experience, the organization’s Capacity Building Unit was set up in 2010 in order to give structure and focus to its efforts to provide platforms for individuals and institutions to learn more about how to produce, analyze and use evidence. Three years later the

ASER ASSESSMENT AND SURVEY FRAMEWORK

Unit has designed, piloted and implemented a series of modules and workshops designed for both internal and external audiences and is set to expand these substantially in the period 2013-16.

Courses/Modules with ASER Associates: ASER Centre has evolved a three-tier capacity building structure for ASER Centre staff, which has been in operation since 2011.

- The first rung of this structure is a foundation level course on basic statistics, STATA,⁶ advanced Excel and communications, targeted at participants who do not qualify to enter the second rung directly.
- The second rung is a Certificate course, certified by the Indira Gandhi National Open University in 2011, comprising a structured year-long learning program titled “Certificate Program for Survey and Research Coordinators”. The first batch to be offered this course completed it with excellent grades in 2012 and the second batch will complete coursework in mid 2013.⁷
- The third and highest rung of the structure comprises an advanced batch of participants who have successfully completed the Certificate course. In 2012-13, modules on Understanding Right to Education, Basics of Sampling, Human Development, Advanced STATA, Advanced Communications and Soft Skills were offered to this batch.

Incoming ASER Associates can complete the full range of coursework in two to three years, depending on whether or not they qualify to enter directly into the Certificate course. Simultaneously, all ASER Associates continue to improve their English skills via Pratham’s Talk Centre program.

Overall, internal reviews suggest that these have been extremely useful learning opportunities whose impact is clearly visible in the improved capabilities of ASER Centre field staff. During 2013, the content of the Certificate course will be revised in line with faculty and participant assessments. Certification from an alternative institution will also be explored.

Modules with Pratham: In 2011 and 2012, ASER Centre carried out one-day and two-day sessions with different groups of Pratham staff. In 2011, 2 day sessions on “Understanding Data and Monitoring” were held with Pratham block and cluster teams across states. These formed part of a Diploma Course, titled Diploma for Community Leadership in Education, certified through Indira Gandhi National Open University and run under the aegis of Pratham Community College. In 2012, two-day sessions on “Understanding and Presenting Data” formed part of Pratham’s certificate program, titled “Certificate for Leadership and Organization Management”, in partnership with Tata Institute of Social Sciences, for developing capacities of second line of leadership in the state teams. Additionally, as part of the trainings for the 4th round of BEP evaluations, a 1-day session was

⁶ One important measure of impact consists of the fact that the module on STATA is being taught by a participant from the Certificate program conducted last year.

⁷ Unfortunately, IGNOU has kept its Community College scheme on hold since July 2012. The ASER Centre certificate program was run through the Pratham Community College. As a result, certification of the current batch of participants cannot be done until the issue is resolved. ASER Centre has decided to continue to run the course and organize internal examinations in July 2013.

ASER ASSESSMENT AND SURVEY FRAMEWORK

organized in every state to share data from the last 3 rounds of evaluations. The 1-day session helped participants understand and engage with the data to formulate action plans for the coming months. Further work on the development and delivery of basic modules (e.g. understanding and using data and evidence) will continue both within and outside the ASER and Pratham circles.

Modules with government functionaries: ASER Centre began to do capacity building work with state government departments and institutions in 2011. To date, these activities have come about at the request of the state government or institution concerned, rather than in response to ASER Centre's search for new groups to whom outreach can be done; and have proved to be a rich learning experience. So far, we have run a series of workshops for SCERT Haryana (in partnership with JPAL) and for DIET and cluster resource teams via SCERT Chhattisgarh. In addition, three workshops were run for district level officers in Bihar in collaboration with BIPARD (Bihar Institute for Public Administration and Rural Development).

These experiences have clearly shown that there is substantial demand for and interest in the ASER Centre model of capacity building, which uses different content (depending on the audience) in order to drive home the same overall objective of collecting, analyzing and using evidence to inform action. Participant feedback to date suggests that these workshops have been useful and well received. Beginning in 2013, therefore, ASER Centre is strengthening its 'Translating Policy into Practice' capacity building program for government personnel at the district and sub district level, and will actively seek participation from state governments. It is hoped that partnerships with Central Square Foundation and JPAL's CLEAR initiative will support this effort.

'Right to Education' workshops with ASER partners: At the ground level, ASER Centre has taken the first step in engaging with ASER partners beyond the ASER survey. The Capacity Building Unit created a 3-day 'translating policy into practice' workshop structured around understanding the Right to Education Act, and all ASER Centre field staff participated in this workshop. Subsequently, during early 2013, these workshops have been run by ASER Associates and ART members for ASER partner organizations and Pratham teams in 10 states, with the participation of about 400 people so far.

This has been our first systematic attempt to build on relationships with ASER partners, and the response so far has been extremely positive, with substantial interest in engaging in activities beyond the workshop. From 2013 onwards, we intend to build on this foundation by working with local partners to implement a series of platforms at local/village level intended to connect assessment to action. Strategies and plans to engage communities at the village level in order to improve learning outcomes are under development and will be implemented from June 2013 onwards.

Internships: An important part of ASER Centre's outreach and capacity building work comprises hosting students for periods ranging from 2 to 8 weeks, typically over the summer months. Internships provide ASER Centre with the opportunity to make progress on a range of concrete tasks

which require more dedicated time and attention than regular staff are able to spare while at the same time offer interning students an excellent opportunity to learn about the organization’s work.

The number of interns coming from universities abroad has been increasing year on year. In 2012, 8 interns from foreign universities worked with us, and a much larger number are expected in 2013-14. Institutional tie-ups have been established with Harvard’s Kennedy School of Government, University of Chicago (Harris School of Public Policy), University of Pennsylvania and Claremont Mc. kenna College (Kravis Leadership Institute).

5. Relevance of ASER tools being a floor level tool

To understand the relevance and purpose of ASER being a floor level tool we need to understand some data collected and tabulated for last five years which clearly shows that there is still a large number of students who are still struggling even with the basics of reading texts. Everyone will agree that the starting points of reading a language would be the skill of recognising alphabets, and then ability of combining letters to make sounds/words, and then proceed to read sentences or sets of sentences. Similarly the starting points of arithmetic would be the skill of recognising numbers, and then gaining ability of manipulating them by addition so as to reach the level of subtraction with borrowing, and then proceed to learning of multiplication and tables to solve division problems. The word “beginner” here refers to a level where children have not even acquired the ability to recognise or read alphabets and numbers.

The table shows the break-up of students all over India in the age bracket of 06 to 14 years and studying in classes 1 to 8. The noticeable points are that the lower the class the more percentage of students who are at the ‘beginner’ level. Also every year the percentage shows an increasing trend barring one exception.

ALL INDIA	2013	>/<	2012	>/<	2011	>/<	2010	>/<	2009
CLASS	BEGINNER LEVEL		BEGINNER LEVEL		BEGINNER LEVEL		BEGINNER LEVEL		BEGINNER LEVEL
1	47.20%	>	43.30%	>	38.36%	>	33.38%	>	31.24%
2	23.10%	>	20.30%	>	16.55%	>	11.71%	>	11.20%
3	12.70%	>	11.90%	>	8.47%	>	5.72%	>	5.31%
4	8%	>	7%	>	4.65%	>	2.95%	>	2.63%
5	5%	>	4.60%	>	3.45%	>	2.04%	>	1.82%
6	3%	>	2.90%	>	1.70%	>	1.21%	>	1.04%
7	2%	>	1.70%	>	1.22%	>	0.94%	>	0.85%
8	1.40%	<	1.50%	>	1.02%	>	0.70%	>	0.57%
ALL INDIA	14.10%	>	12.80%	>	10.35%	>	8%	>	7.58%

Table 4 – Percentage of students who do not know reading (All over India)
Source: ASER Centre Data (2013 to 2009)

ALL INDIA	2013	>/<	2012	>/<	2011	>/<	2010	>/<	2009
CLASS	BEGINNER LEVEL		BEGINNER LEVEL		BEGINNER LEVEL		BEGINNER LEVEL		BEGINNER LEVEL
1	41.60%	>	39.60%	>	36.51%	>	33.51%	>	30.73%
2	17.70%	>	16.30%	>	15.02%	>	11.73%	>	11.31%
3	8.60%	<	8.70%	>	7.54%	>	5.43%	=	5.43%
4	5.20%	>	4.90%	>	3.83%	>	2.76%	<	2.80%
5	3.30%	>	3.20%	>	2.87%	>	2%	>	1.94%
6	2%	=	2%	>	1.62%	>	1.16%	<	1.24%
7	1.40%	>	1.30%	>	1.25%	>	0.94%	>	0.88%
8	1%	>	1.30%	>	1.07%	>	0.71%	>	0.61%
ALL INDIA	11.20%	>	10.70%	>	9.54%	>	7.92%	>	7.59%

**Table 5. – Percentage of students who do not know even recognizing numbers (All over India)
Source: ASER Centre Data (2013 to 2009)**

The purpose of ASER is not doing a high stakes assessment like JEE or Medical entrance, neither it is grade level assessment like Summative assessment for grade 8 based on age, grade and syllabus, it is not promoting students to higher level classes nor it is entrance examination, the results are not used for decision making. The results of this assessment are not affecting any aspect of a student’s academic life and progress. ASER is also not national testing like the National testing in the US, where every student has to attempt the exam at a specific grade level or levels. ASER is also not a government driven system monitoring of education system, department and practices in the country.

The learning levels that ASER measures are fundamental learning objectives that comes before acquiring other competencies of learning viz remembering, understanding, applying, analyzing, evaluating and creating, as prescribed by a popular taxonomy of learning, i.e. Bloom’s taxonomy.

It is just an assessment done on large scale to inform policies and practices about the fact that despite multiple interventions, efforts, policies, practices and investment **there are still significant numbers of children who do not know how to read and write**

ASER is process of understanding learning levels of children utilizing simple tools, criterion referenced test and the results should be used to inform policies. The purpose of ASER is not grade level testing and it does not follow norms or standards referenced assessment **it is rather criterion referenced assessment which informs how many people know and how many don’t know.**

ASER test is criterion referenced. In simple language it means either you know it or you don’t know it. This is like Driving licence test where you can either drive a car or you can’t, there is nothing in between. The logic is as simple as if I do not know how to start a car will somebody assess me on how well do I drive it. Will somebody assess me on how well do I drive in city or on highway. Will

somebody assess me on whether I can drive on a rough muddy patch or on a metalled road? Certainly not. Because it does not make sense.

The RTE or Right to Education act 2009 has a Policy of no detention and of passing every school student till grade viii. The no-detention Policy, under the Right to Education (RTE) Act, states that no student can be held back or expelled from school, irrespective of academic performance, till Class-8. This policy undoubtedly promotes the Right to elementary education to all but it also has received a lot of criticism due to the poor levels of students when they reach class IX and are still casual in their approach towards education. It reduces the pressure on the student to study and also it makes the teacher less accountable. One can go through the tables and figure out how the trend to not know basic reading and arithmetic is increasing on a yearly basis since 2009 barring a few exceptions.

India is a developing country and if we look at the human development index we find it still on a lower pedestal in all aspects. In another sign that India has much catching up to do, the Human Development Report 2013 released by the United Nations Development Programme (UNDP), ranked the country at a low 136 among 186 countries on its human development index (HDI) — a composite measure of life expectancy, access to education and income levels.

When the students of rural India, (who are facing day to day livelihood issues, health transport and sanitation problems, socio economic concerns, pressure to do household chores or earn in seasonal jobs) do not know what to do after opening a text book, how to read out what has been written in those pages, how we expect them to learn things out of the book. Will it be reasonable to assess them on different learning objectives? Certainly not.

The other reason of making ASER testing process simple is **not to limit assessment & measurement to experts, thereby allowing citizens to participate and understand the process.** The whole ASER drive every year is balanced on the shoulders of volunteers spread across the huge geographic area of India. These people are trained rigorously every year to conduct the household survey and alongside assess students on basic reading and arithmetic.

Usually assessments are conducted in isolation from the community in a regular academic set up. The reason why we do this is to engage more people, community and parents. The RTE act also suggests involving the community as a major stake holder in education and educational assessment this is to allow more people to understand evidence thereby improving accountability of both the learner as well as the educator.

6. The framework of ASER Reading and Arithmetic tools

For initiating ASER, one of the first tasks was to define what we meant by learning – especially basic learning. By this time, the accumulated experience from years of working with children had made us realize that reading was a fundamental skill. Without learning to read it is impossible to make progress in the education system or even in life. So basic reading had to be one of the things we assessed and it had to be done one on one with each child. Similarly with Arithmetic – number

recognition and basic numerical operations seemed to be the first important building block for anchoring other capabilities in Arithmetic. Both these skills were basic and we knew that access to schooling was not necessarily ensuring these skills in children. In clearly defining what we meant by basic learning we made a bold statement. So right from the first year, ASER looked for answers to the following questions: Are children enrolled in school? Are they able to read simple text? Can they recognize numbers and do basic arithmetic operations?

The education system in India is embedded in India's federal system of government with centre, states and local governments each having specific roles and responsibilities. Like in many other countries, India too has a national curriculum framework for elementary education. State governments develop textbooks based on the guidelines laid down in the national curriculum framework. The latest National Curriculum Framework (NCF) was published in 2005. States began to review and revise their textbooks based on NCF 2005 but this process takes time. This meant that in the period 2005 to the present, textbooks used in some states in India have been patterned on NCF 2005 and others have still been based on the earlier curriculum framework. By 2013 almost all states have begun or completed the task of re-doing their primary school level textbooks according to NCF 2005.

But regardless of the curriculum framework, teaching-learning activities in Indian classrooms are heavily dependent on and driven by textbooks. Most teachers are mindful of "finishing the textbook" by the end of the school year. Thus we have used textbooks as the main source of guidance on content in developing the ASER tasks.

6.1 Curriculum mapping done for ASER

The ASER tools consist of basic Reading and Arithmetic tools. The tools were developed keeping in mind that the tools needed to assess the learning levels of the children and have the ability to engage citizens in assessing and discussing those levels. It was also important that the tools enabled citizens to generate their own data. Therefore the tools developed are easy to understand, administer and interpret. The aim of the tools is to mark the child on the highest level the child can comfortably do. Both the Language and the Arithmetic tools have 5 levels and the child can be marked on any one of those 5.

Language and arithmetic textbooks for early grades across all major Indian states were analysed as part of the preparation for ASER. This analysis indicated that by end of Grade 2 in all states, children

are expected to be able to read basic text of 8-10 lines in the regional language. By the end of Grade 1, the expectation is that children will be able to read simple sentences. In arithmetic, all state textbooks expect children to be able to do a two digit numerical subtraction problem with borrowing. 3 by 1 digit numerical divisions is expected of children in Grade 3 or Grade 4. The ASER tools are built on these fundamental elements. By “design” ASER is a “floor” test, which means that ASER test will not be able to provide more information on the learning level of a child, if she is able to read or compute all the items in the test. This means that the same set of tasks are given to all children regardless of age or grade.

GRADE	LANGUAGE	GRADE	ARITHMETIC
Before Std 1	Alphabets	Before 1	Number recognition 0 to 9
Before Std 1	Words	Before 1	Number recognition 10 to 99
Std 1	Paragraph	2 or 3	Subtraction with borrowing
Std 2	Story	3 or 4	Division with remainder

Table 6 – Curriculum Mapping for ASER tools

6.2 The concept of reading and its levels – ASER

In layman’s language, an Indian student of age group 6 to 14 must be capable enough to read a passage that is written for class two with fluency. This student has to be above the level of reading alphabets, words and paragraphs to achieve the highest reading levels.

6.3 The reading tool

The reading tool assesses the child on basic levels of reading. The highest level being the story reading level in which the text is pitched at grade 2 level and the lowest level being not even being able to identify an alphabet. The 5 levels in the reading tool are:

Level	Proficiency Description
Beginner	Cannot identify even 4 out of the 5 letters
Letter	Can correctly identify 4 out of the 5 letters
Word	Can correctly read 4 out of the 5 words
Paragraph	Can read a paragraph which is a Grade 1 level text. The paragraph has 4 sentence and approximately 19 words and it has to be read like one ‘reads a sentence, rather than a string

	of words'. Can make 2 to 3 mistakes.
Story	Can read a short story which is a Grade 2 level text. The story has 7-10 sentences and approximately 60 words. Can make 2 to 3 mistakes.

Table 7 – Levels of proficiency in ASER Reading tool

6.4 Development of the reading tool

Each reading tool has 4 samples or test forms. Each sample has different texts/words/letters to read, but these are of the same difficulty level. The reading tools in Hindi & English languages are prepared centrally, according to a structured set of guidelines. Then using these guidelines, the reading tools for 18 languages are adapted. The guideline is as follows:

Guideline to make letters

- The letters in the samples should be commonly used letters.
- Letters that have ambiguous pronunciations regionally should not be used.
- One letter can be repeated only twice across samples. For eg. If 'ब' letter is in sample 1 then it can only be in one more sample.

Guideline to make words

- The words should be commonly used by a child in the age group of 5-7 years.
- The words should be 2 letter words with commonly used matras like 'इ, ई, आ, औ, ऐ'. No word with rare matras like 'अतः, प्राप्त' should be used.
- Each word should have 1 or 2 matras.
- No joint words or 'samyukt akshar' should be used (as far as possible). For some languages where joint words are very commonly used in the state textbooks, then they should try to use minimum possible words.
- Words used should be very commonly found in Std 1 textbooks and commonly used by a Std 1 child.

Guideline for making paragraphs and story

- Usage of difficult words:
 - Paragraph should have maximum 1 difficult word at Std 1 level.
 - Story should have maximum 2-3 words at Std 1 or 2 level

ASER ASSESSMENT AND SURVEY FRAMEWORK

- The context of the paragraph or story should not be alien to the child in the state.
- Only narrative texts with fictional characters should be used for developing the paragraphs and stories.

To ensure consistency of difficulty levels for paragraphs and stories across different language-reading tools, a range of Type Token Ratio (TTR)⁸ has been maintained across the reading tools. (Refer to the paper attached in appendix for more details)

Since ASER is tightly tied to the state's curriculum, the textbook helps determine the difficulty level of words in terms of meaning, spelling or context. Lists of such words from Grade 1 & 2 have been generated and used while preparing the paragraph and stories to ensure consistency.

6.5 The scoring system for Reading tool

STUDENT NAME	BEGINNER LEVEL	ALPHABET LEVEL	WORD LEVEL	PARAGRAPH LEVEL	STORY LEVEL
A		✓			
B	✓				
C			✓		
D					✓
E				✓	
TOTAL	1	1	1	1	1

Table 8 – Scoring system of ASER reading tool

To understand the scoring process let us consider ABCDE are the students. A gets a tick mark at beginner level which means that he does not know even to read the alphabets. B is one level up as he knows how to read the alphabets. C is at word level which means he knows how to read words. D is even higher as he knows how to read a paragraph but not a story. E is on the highest level i.e. story level. The totals are not marks. These are persons achieving each one of these levels.

⁸ TTR in short is the ratio of the number of unique words in a text to the total number of words in the text. The more the ratio is closer to 1, then it is indicative of a higher difficulty level in reading the given text.

6.6 ASER Reading levels

ASER - Reading levels

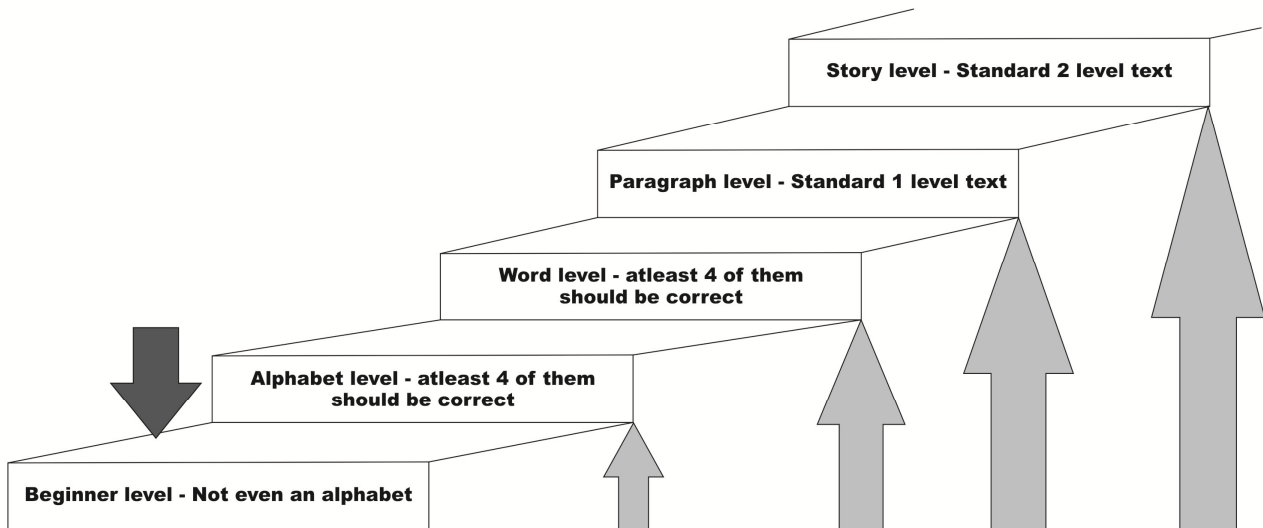


Figure 2 – ASER Reading Levels

6.7 The Process of ASER Reading assessment

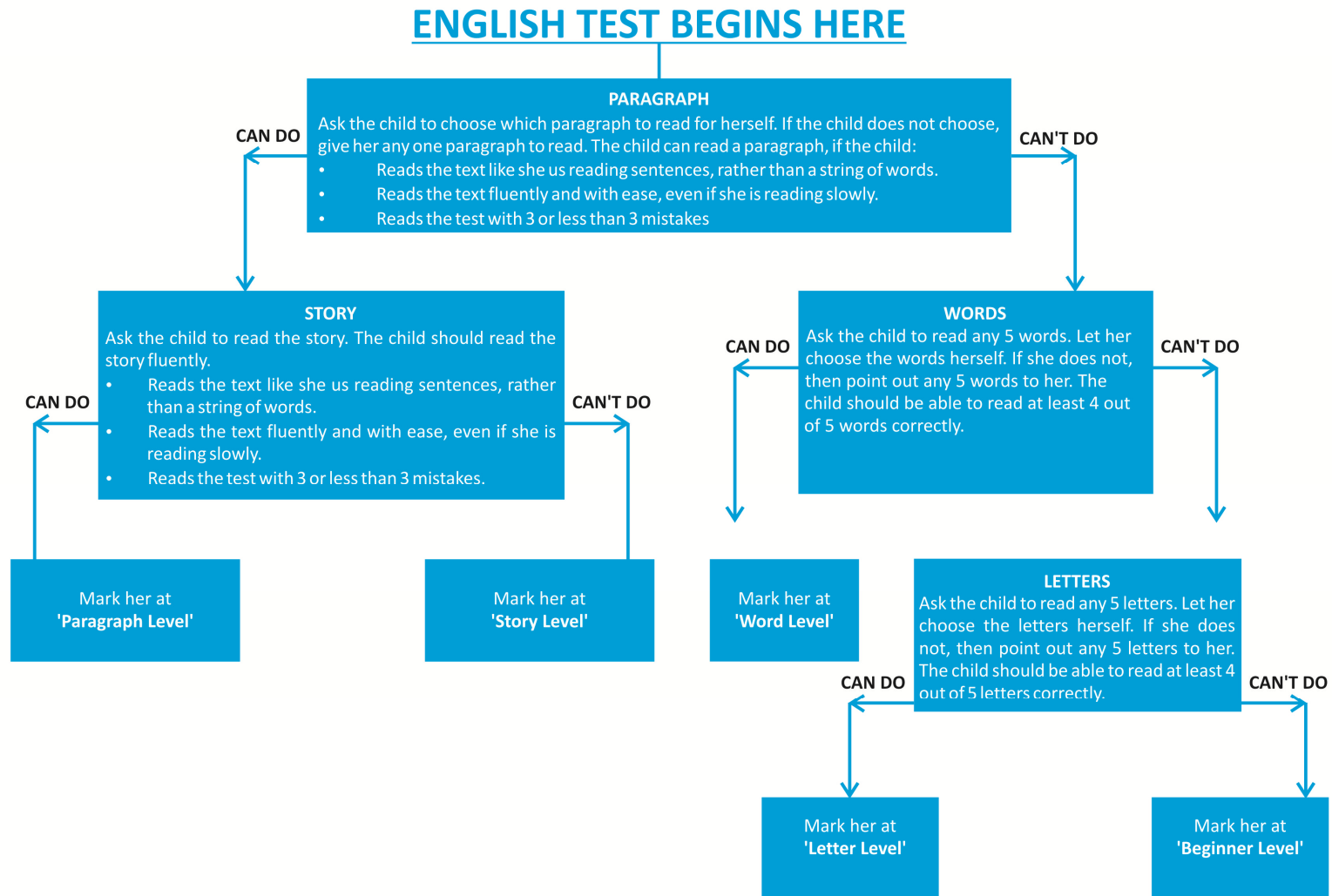


Figure 3 –The process of ASER Reading Assessment

6.8 The concept of Arithmetic and its levels – ASER

In layman’s language, an Indian student of age group 6 to 14 must be capable enough to solve a division problem with remainder that is written for class two. This student has to be above the level of reading numbers 0 to 99 and subtraction with borrowing to achieve the highest reading levels.

6.9 The Arithmetic Tool

The Arithmetic tool assesses the child on basic Arithmetic operations. The highest level being the 3 by 1 digit division problem (Std 3 level) and the lowest level being not even being able to identify single digit numbers (Std 1 level). The 5 levels in the Arithmetic tool are:

Levels	Proficiency Description
Beginner	Cannot even identify 4 of any 5 single-digit numbers
Number Recognition (1-9)	Can identify 4 out of 5 numbers
Number Recognition (11-99)	Can identify 4 out of 5 numbers
Subtraction	Can correctly solve two subtraction operations (2 by 2 subtraction with borrowing)
Division	Can correctly solve one division operation (3 by 1 division with remainder)

Table 9 – Levels of proficiency in ASER Arithmetic tools

6.10 Development of the Arithmetic tool

This tool is created after mapping the syllabus across the nation centrally and is used across States without any change. There was no requirement found to change the tool and refine it year after year.

6.11 The scoring system for Arithmetic tool

Student Name	Beginner Level	No. Recognition (0 To 9) Level	No. Recognition (10 To 99) Level	Subtraction Level	Division Level
A	✓				
B		✓			
C			✓		
D				✓	
E					✓
TOTAL	1	1	1	1	1

Table 10 – Scoring system for ASER Arithmetic tools

To understand the scoring process let us consider ABCDE are the students. A gets a tick mark at beginner level which means that he does not know even to recognize and read the numbers. B is one level up as he knows how to read the numbers up to 9. C is at number recognition level for numbers 10 to 99. D is at Subtraction level which means he knows how to solve subtraction problems with borrowing which essentially also require the skill of addition. E is on the highest level i.e. Division level which also essentially requires knowledge of multiplication and tables. The totals are not marks. These are persons achieving each one of these levels.

6.12 ASER Arithmetic levels

ASER - Arithmetic levels

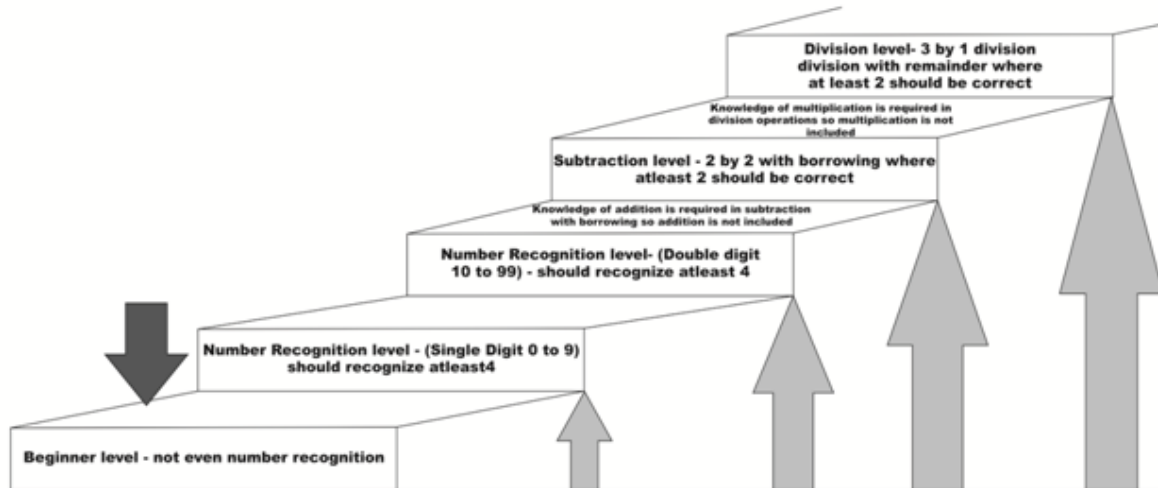


Figure 4 – ASER Arithmetic Levels

6.13 ASER Arithmetic assessment process

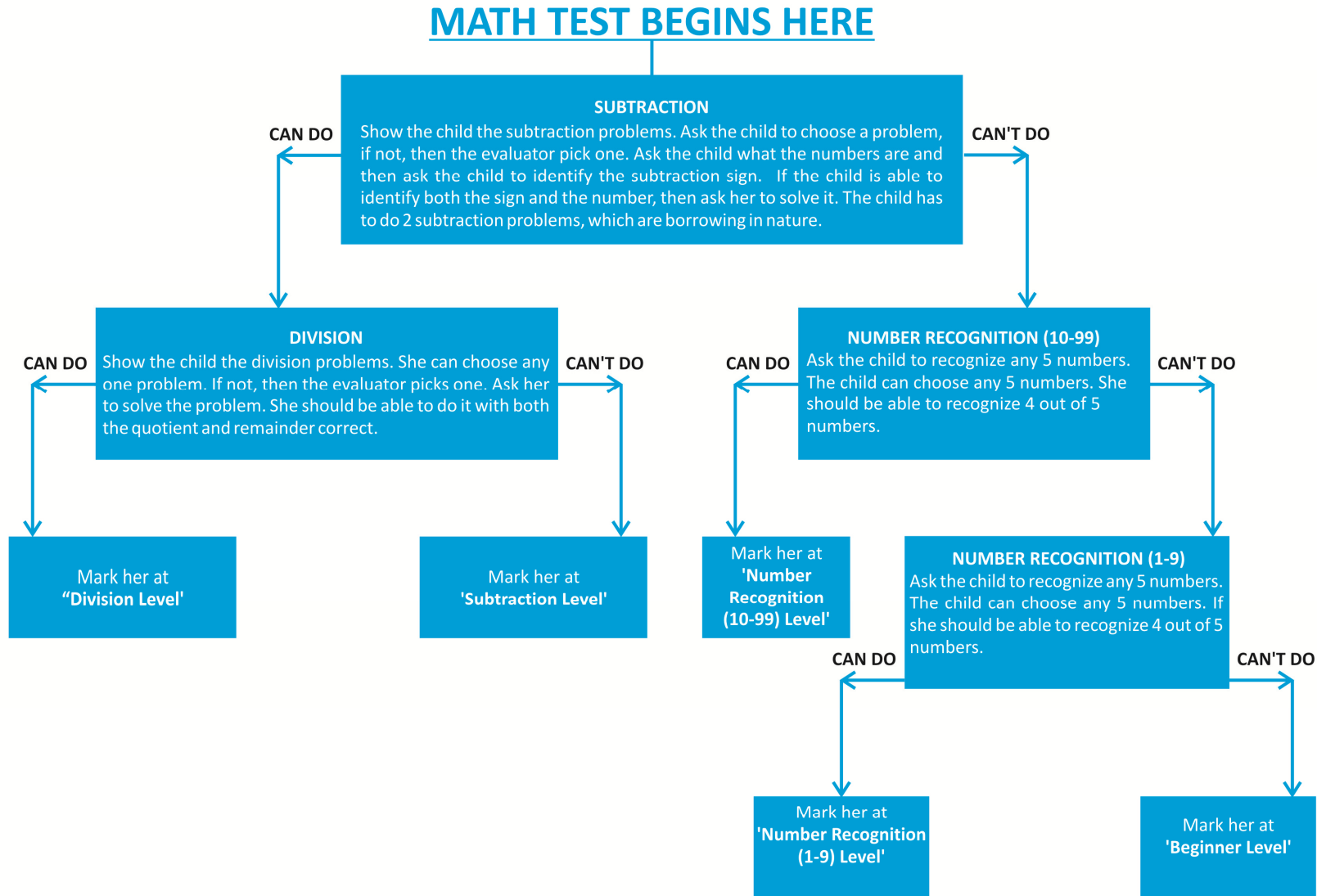


Figure 4 – ASER Arithmetic assessment process

7. Amendments in due course of years in the ASER reading and arithmetic tools

The reading tool has not undergone any change in its methodology since it was first introduced in the year 2005.

Regarding the Math tool, the number recognition item had undergone a refinement from the 2005 version. In the first year, this item tested number recognition of 1 to 99. But this was broken up into two categories – number recognition (1-9) and number recognition (10-99) for 2006 and the following years.

All India % Children by class and Arithmetic level All schools - ASER 2005					
Std	Beginner	Recognize numbers 1-99	Can subtract	Can divide	Total
I	57.6	34.0	5.6	2.8	100
II	31.3	45.2	17.2	6.3	100
III	17.4	35.6	32.1	15.0	100
IV	10.9	24.1	33.8	31.2	100
V	7.5	18.1	29.9	44.6	100
VI	5.5	14.1	26.0	54.5	100
VII	4.3	11.5	21.2	63.1	100
VIII	3.3	9.3	17.5	69.8	100
Total	19.0	26.4	23.7	30.0	100

All India % Children by class and Arithmetic level All schools - ASER 2006					
Std	Beginner	Recognize numbers 1-99	Can subtract	Can divide	Total
I	53.8	38.4	5.7	2.1	100
II	26.0	48.8	19.0	6.1	100
III	13.5	37.8	33.4	15.3	100
IV	7.5	24.5	37.4	30.6	100
V	4.7	15.9	34.1	45.3	100
VI	2.9	10.1	28.5	58.5	100
VII	1.9	7.5	23.3	67.3	100
VIII	1.2	5.0	18.0	75.8	100
Total	16.1	25.6	24.6	33.7	100

In 2005 when ASER first started out, the Math tool had only 3 items, number recognition, subtraction and division. The number recognition test children if they can recognize at least 4 numbers correctly from a list of 10 numbers and these numbers are a mixture of both single and double digits. The same approach was also used in the following year, 2006. When this process was followed in the first 2 years of ASER, there was a felt need to break up the 'number recognition' level into two – one each for single digit and double digit numbers, because we could encounter a lot of children who would attempt and recognize the single digit numbers only. The first two tables show the break-up of percentage of children for each level of proficiency. In both the tables, we can clearly see that the percentage of 'number recognition' is quite high, especially for early graders. So there was a requirement to gather more information on this level, without making the process complicated.

**All India % Children by class and Arithmetic level
All schools - ASER 2007**

Std	Beginner	No. Recognition		Can subtract	Can divide	Total
		1-9	10-99			
I	31.6	42.9	20.1	3.9	1.5	100
II	11.6	31.8	38.6	14.2	3.7	100
III	5.6	18.4	33.7	31.2	11.2	100
IV	3.3	10.3	24.1	34.7	27.6	100
V	2.1	6.5	17.1	31.9	42.4	100
VI	1.5	3.8	12.8	27.8	54.2	100
VII	1.1	2.8	9.9	23.3	62.8	100
VIII	0.9	1.8	7.4	18.3	71.7	100
Total	8.2	16.7	22.0	23.1	30.1	100

As a result of this, the number recognition level was further divided into two levels. Due to this improvisation on the tool, not only we could know the percentage of children who could recognize single and double digit numbers, but also the beginner level has also been reduced significantly. This is mainly because, children who could

recognize only single digit numbers and not double digit numbers, were clubbed as children at the beginner level. This difference is significant in the early graders of Std I to III.

Tables 11 – 13 Performance of children on Arithmetic tools from 2005 to 2007

8. Other Bonus Tools

In ASER, every year we develop some Bonus tools. These range from comprehension questions in the Language testing to everyday skills or functional Arithmetic like time telling, currency operations etc. In ASER 2010, a Bonus tool on critical thinking was developed. This tool had questions related to calendar reading, menu card reading, estimation etc.

Table 14 - Different Bonus Tests Used Over the Years

Year	Learning Assessments: Bonus Test
2005	<p>Children in 6- 14 years</p> <ul style="list-style-type: none"> Writing test (a sentence from any of the easy paragraph to be dictated clearly to the child)
2006	<p>Children in 5- 16 years:</p> <ul style="list-style-type: none"> Writing test (a sentence from any of the easy paragraph to be dictated clearly to the child) Comprehension test (2 questions after reading a one page story). This task was given only to Story Level readers. One subtraction & one division word problems <p>Adult women (above the age of 16 years) were also tested for their reading ability (reading an easy paragraph).</p>
2007	<p>Children 5- 16 years:</p> <ul style="list-style-type: none"> Comprehension test (2 questions each after reading a paragraph & a short story). This task was given to all children. English language test - Reading and Meanings (words and sentences). Two subtraction word problems
2008	<p>All children of 5-16 years were given:</p> <ul style="list-style-type: none"> Currency tests (2 questions). Telling time tasks (2 questions).
2009	<p>Children in 5-16 years:</p> <ul style="list-style-type: none"> English language test - Reading and Meanings (words and sentences).
2010	<p>Children in 5- 16 years:</p> <ul style="list-style-type: none"> For Std 5 onwards: Everyday math tasks (8 items) were given to assess ability to apply arithmetic skills in day to day problems. Mothers were tested number sense by asking if they could punch in a 10 digit phone number using a mobile handset.
2011	<p>Children in 5- 16 years:</p> <ul style="list-style-type: none"> For Std 5 onwards: Bonus Maths questions (4 items) and bonus general knowledge questions (8 items).
2012	<p>All children in 5- 16 years:</p> <ul style="list-style-type: none"> English language test - Reading and Meanings (words and sentences).
2013	Not Bonus Test

9. Key principals and guidelines for all stakeholders of ASER

KEY STAKE HOLDERS OF ASER	IMPORTANT GUIDELINES
GOVERNING BODY	ASER has to be conducted for every year from 2005 to 2014 continuously
DONOR AGENCIES / PARTNERS	Kindly support ASER as a citizen led assessment
TOOL CONSTRUCTORS	Kindly follow standard norms of tool construction
ASSESSORS	Kindly follow the ASER tool administration and survey instructions
SURVEYORS	Kindly follow the ASER survey instructions
DATA SPECIALISTS	Kindly follow data entry instructions
ANALYST	Kindly analyze the data using the standard pattern
REPORT WRITERS	Kindly write the report using the standard pattern
PUBLICATION	ASER report is a publication of Pratham – ASER Centre
DISSEMINATION EXPERTS	Kindly quote ASER report year wise for any data sharing
COMMUNITY	Kindly support ASER and its findings
PARENTS	Kindly support ASER and its findings
STUDENTS	Kindly understand ASER findings and improve learning levels

Table 15– Guidelines for ASER Stakeholders