Frequently Asked
Questions about ASER

The why, what and how of ASER

The ASER initiative emerged out of a set of interrelated events, experiences and opportunities. This note contains some background information that may be useful for understanding the context and purpose of ASER. The objective of the note is to explain major influences on the design, content and implementation of ASER over the years.

Pratham's[1] early work in primary education

In the first decade of our work with children in rural and urban communities across India, we noted that both communities and governments were preoccupied with the visible challenges in education: those of inputs, access, and provisions. The less visible but deeper issue of children's learning was 'felt' but not clearly articulated in educational debates and discussions. In many states, more than 90% of children in the age group 6-14 were already enrolled in school. But there was no concomitant focus on children's learning either in policy or in practice. As a consequence, there was no clear nationwide agreement on learning goals or their assessment in elementary education. In fact, in many quarters within the education establishment in India, there was active resistance to the notion of defining learning in measureable terms and at times to the very idea of assessment as well.

In our work we found that surprisingly large numbers of children in primary grades were struggling with early reading and basic arithmetic. We too were struggling to deal with this problem. We needed to be able to accelerate children's pace of learning if they were to have a real and meaningful opportunity to complete primary schooling. One of the big learnings from this phase of our work was realizing the fundamental importance of early reading. Without learning to read, a child could not propel herself or himself further in the education system.

Large scale pilots within Pratham led to three important developments. First, we designed a series of simple reading tasks (which later came to be known as the ASER reading tool) that helped Pratham instructors gain an understanding of their children's reading level and also helped them to track children's progress. These tools were easy and quick to administer, and the results were easily understood by teachers, administrators, and parents.

Second, an unintended consequence of using this tool was that it seemed to help parents, especially illiterate or poorly schooled parents, understand what reading entailed. This demystification of 'learning' enabled parents to understand the goal of the reading interventions and to support their children's learning. The use of the tool with communities created awareness and mobilization. Given the assessment tool's simplicity, it also worked well when taken to scale and across different contexts.

The third important development was the evolution of a pedagogical package (methods, materials, grouping, assessment) that helped children (especially those above the age of 7-8) to learn to read quickly. Within the Pratham network, this method came to be called 'L2R' (Learning to Read). Like the reading assessment tool, instruction using the L2R package was possible on a large scale, both inside schools (by teachers) and also in the community (with community volunteers). Pratham's experiences in the period 2002-2005 indicated that if reading was a 'problem', some solutions were attainable fairly quickly.[2]

The political and economic context

The broader political and economic landscape in India in the first decade of the new century was also a factor that influenced the birth of ASER. At the national level, the UPA government had come into power in 2004. In its initial policy pronouncements, the new government spoke of "outlays to outcomes"[3] and annual reports of outcomes for the different social sectors were proposed.[4] Despite this rhetoric, hardly any central government department was able to provide annual reports on outcomes. The central Ministry of Human Resource

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[1] Pratham is one of the largest non-governmental organizations working in education in India. Pratham's mission is "every child in school and learning well". ASER Centre (the organization that facilitates the ASER survey) is the autonomous research and assessment unit of Pratham.

[2] There have been many impact evaluations carried out on the effectiveness of Pratham's instructional programs. See the website of J-PAL (Abdul Latif Jameel Poverty Action Lab) for details.

[3] See for example the Budget Speech given by the Finance Minister, P. Chidambaram, on February 28, 2005. Available at http://indiabudget.nic.in/ub2005-06/bs/speecha.htm

[4] June 4, 2009. President of India, Smt. Pratibha Devisingh Patil's address to the Joint Session of 15th Lok Sabha in New Delhi. http://pib.nic.in/newsite/erelease.aspx?relid=49043

Development continued to produce annual reports focused on inputs, access and provision as well as financial reports on allocations and expenditures. Periodically it also produced reports on student achievement in government schools.[5]

The allocations for elementary education, however, saw a significant increase from the financial year 2004-05, after the Union government imposed a 2 percent education cess for elementary education. The cess is an earmarked 'tax-on-tax' that is used exclusively to finance the flagship program for elementary education (Sarva Shiksha Abhiyan, or SSA) and the Mid Day Meal scheme.

These background contextual conditions were important in leading us to think about generating an outcome-based annual report in education that could push public discourse and action towards focusing on learning and not just on schooling.

Developing tools for assessing learning: Early reading and basic arithmetic

One of the first tasks was to define what we meant by learning – especially learning in the early grades. By this time, our accumulated experience from years of working with children and our understanding of the available research on reading made us realize that reading was a fundamental skill. So the foundation skills for literacy acquisition in early grades such as recognizing letters, reading simple words and reading Grade 1 and Grade 2 level connected text were of central focus in our assessments. Similarly, number recognition and basic numerical operations seemed to be the first important building blocks which anchored other capabilities in arithmetic.

Across the world, most achievement tests are pen-and-paper tests administered to children in groups and typically in school. But this approach is not feasible if a child is a beginning reader or struggling to read, as it requires him/her to read and comprehend the instructions and then carry out the required tasks. Early reading is therefore best assessed one-on-one with individual children in an oral format.[6] To minimize the reading demand on children and to maintain a standard approach, the arithmetic assessment was also designed to be administered individually in an oral format.

We wanted both reading and arithmetic tasks to assess basic skills. We used textbooks as the main source of guidance on content in developing the ASER assessments, given that regardless of the state, school system, or curriculum framework,[7] teaching-learning activities in Indian classrooms are heavily dependent on and driven by textbooks,[8] and most teachers are mindful of 'finishing the textbook' by the end of the school year.

Language and arithmetic textbooks for early grades across all major Indian states were analysed as part of the preparation for ASER. These analyses indicated that in all states, children are expected to be able to read simple sentences in the regional language by the end of Grade 1 and basic text of 8-10 lines by the end of Grade 2. In arithmetic, all state textbooks expect children to be able to do a two digit numerical subtraction problem with borrowing by Grade 2. Three digit by one digit numerical division is expected of children in Grade 3 in some states and Grade 4 in others.

We knew that simply being in school was not a guarantee of learning these skills. 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 Grade 1 and Grade 2 level text? Can they recognize numbers and do basic arithmetic operations?

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[5] http://mhrd.gov.in/documents/term/140, http://mhrd.gov.in/documents/term/142

[6] Typically this is how assessments of early reading ability are administered, e.g. the Early Grade Reading Assessment (USAID) and the Dynamic Indicators of Basic Literacy Skills (DIBELS, University of Oregon Center on Teaching and Learning).

[7] 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. Typically the central government makes the overarching law or policy framework, and states are responsible for framing and implementing specific rules, systems and procedures within this framework.

[8] As in many other countries, India has a National Curriculum Framework for elementary education. State governments develop textbooks based on the guidelines laid down in the National Curriculum Framework. Currently, there are examinations at Grade 10 and Grade 12 level in India, although the Grade 10 exam may soon become optional in many states. These examinations influence teaching and learning practices in lower grades as well. All schools have to be affiliated to specific examination 'boards'. These can be national boards (the Central Board of Secondary Education and the Indian Certificate of Secondary Education being the main national boards) or state boards. Majority of schools are affiliated to state examination boards. Each school system uses the textbooks that are mandated for the board that they are affiliated to.

By design ASER is a 'floor' test: the purpose was to be able to judge if children were at or below a specific level (Grade 2 level for reading and Grade 3/Grade 4 level for arithmetic). The objective is not to administer grade appropriate assessments but rather to gauge early reading and arithmetic ability. As a result, the same tool is administered to all children regardless of age or grade.[9]

Deciding the target population: Generating district level estimates

Each year, state governments submit annual work plans to SSA in order to access funds earmarked for elementary education. These plans are the basis on which financial allocations are made by the central government to the states. Annual work plans are made at the district level and then aggregated into state plans. Presumably, information available at the district level can provide useful inputs into the annual planning process. While information on enrollment and access is readily available at district and sub-district levels in India, there was no current information on learning available at district, state or national levels within the government that could inform the annual planning process.

Given this information gap we decided that ASER would generate estimates for enrollment and learning at the district level. Sampling was designed to ensure that ASER estimates were representative at this level. Generating district level estimates requires much larger sample sizes than state or national level estimates. For this reason, even major government surveys such as the National Sample Survey (NSS) generate estimates that are representative only at the state level, not at the district level. Estimates of poverty in India are also available only at the state level. To be able to generate reliable district level estimates, ASER samples 30 villages from each rural district. This means that a total of more than 16,000 villages are sampled and visited every year, more than twice the number of villages in the NSS sample for rural India.

Deciding where assessments should be done: Household survey

In-school assessment of learning outcomes is the standard practice in developed countries. In these countries, typically all children are in school, and all schools are listed and fall under the jurisdiction of some national or provincial authority. Since a universal list of schools exists, it is possible to draw a sample from this list. And since all children are accounted for, it is possible to sample children, whether by age or by grade, nationally or provincially.

However, this may not be the case in many developing countries, for several reasons. India is a case in point.

■ *School attendance varies:* Although a lot of information is available on school enrollment, there is very little systematic measurement of attendance. Measuring attendance is harder to do on an ongoing basis in a reliable way. In India, all measurement of school attendance (including ASER) has noted huge variations in school attendance across states - ranging from 90% on a random day in schools in south India to close to 50% in schools in some northern states. As a consequence, school-based assessments of student learning will leave out non-attending children who may have poorer learning levels.

■ *Children drop out of school*: Dropping out from school is often strongly correlated with falling behind or 'failing' in school and eventually leaving. This figure may be higher among older children. If assessments are school-based then such children will not be included. However, information about learning levels of these children can reveal a lot about what needs to be done to design 'second-chance' schooling opportunities and to improve learning within school systems. By excluding them, such information and therefore possible pressure points on the education system will be lost.

■ *Children attend different types of schools*: In India, for example, children can be enrolled in different types of government schools and a wide range of private schools - many of which are not recognized by the government and hence may or may not be included in official lists. Nationally, in rural India, the proportion of children of elementary school age who go to private schools is close to 30% and rising each year; in some states this proportion is above 50%. A school-based assessment would not include children enrolled in the vast majority of unlisted private schools (especially low-cost schools). By not including such children we would be leaving out increasing proportions of school-going children.

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[9] Tools are prepared and administered in 20 languages including English.

A representative sample of ALL children must be drawn from ALL children (i.e. children enrolled in government schools, children enrolled in private and other schools, school drop-outs and children who do not attend school regularly). Therefore, in contexts like India, to get a representative sample of ALL children, drawing a sample based on household surveys and subsequently administering the assessments in the household is the only possible option. For these reasons it was decided that ASER would be a household survey. Globally, ASER is perhaps one of the largest assessments of learning done outside the school.

Ensuring citizen participation in ASER: Using volunteers

In contemporary India, the concept of 'schooling' is well understood, by both parents and governments. But this is not the case for 'learning'. Often it is assumed that if children are going to school, they must be learning. In contexts where a large proportion of parents may not have been to school, people often do not have a clear or practical understanding of what 'learning' entails.

This is further compounded by several other factors. First, typically inputs, access or provision is measured - but outcomes are not. Second, often the practice of using empirical evidence to understand current status and to inform further action is rare. Third, learning goals are not clearly articulated or publicized. These factors strengthen the common assumption that if children are in school, they must be learning.

Since 'schooling for all' was well understood by policymakers, planners, practitioners and parents even in 2005, it was time to shift the focus to 'learning for all'. We assumed that one of the important ways to achieve wider awareness about the issue of learning would be through the participation of a broad-based cross-section of people around the country. Widespread involvement of local citizens in conducting the assessment in each district in India was therefore crucial to the architecture of ASER. But this had important implications for several aspects of ASER's design:

- *Simplicity of the assessment tool and administration protocol*: Widespread participation of citizens in 600 districts implied a massive scale for training and implementation. Therefore the process needed to be relatively straightforward in terms of actual testing of children (process and time for each child and each subject) as well as the time taken to complete a sampled village. The assessment tools and administration protocol have been designed keeping in mind that ASER is a household survey. There are constraints to what can be assessed in the community or in the household.

- *Volunteer model*: Large-scale participation has important cost implications. More than 25,000 volunteers participate in ASER each year. They are trained, mentored and monitored by over 1,000 Master Trainers ASER volunteers reach 600,000 to 700,000 children annually in 15,000 to 16,000 villages. ASER volunteers are remunerated only for travel and other actual costs. Hence the ASER survey is truly a citizen-led initiative. Training for ASER takes 2-3 days. During training, one day is spent in actually practicing elements of the survey process and the testing of children in nearby communities. The actual ASER survey is conducted over two days with a pair of surveyors assigned to one sampled village. This is usually done over a weekend.

- *Stringent quality control:* The scale of implementation of the model also requires a stringent quality control framework. This framework has evolved over several years. It includes checks at every level of the survey process. The two main quality checks consist of 'monitoring' volunteers and trainers during the survey and 'recheck' of their work once the survey is complete. More than 50% villages were monitored and/or rechecked in ASER 2012.

Summary

The ASER approach differs in fundamental ways from that of other large-scale learning assessments. The guiding principles of the model can be summarized as 1) household-based assessment, so as to include ALL children – those in government schools, private schools, and not in school; 2) assessment of children's mastery of basic reading and arithmetic, rather than grade level competencies, using tools that are simple to administer and easy to understand; 3) involvement of 'ordinary people', rather than experts, in conducting the assessment and disseminating the results; and 4) the generation of estimates at district, state, and national levels, so as to facilitate local level discussions, planning and action.

Readings on ASER:

- See the section on the ASER Centre website - ASER Survey key documents http://www.asercentre.org/?p=157

- Banerji, R. (2013). "The Birth of ASER". *Learning Curve* Issue XX. Azim Premji Foundation publication.

  http://img.asercentre.org/docs/Publications/Other%20publications/banerji_p85_birthofaser_learningcurvexxaug2013.pdf

- Banerji, R., Bhattacharjea, S., Wadhwa, W. (2013). "Annual Status of Education Report". Special Issue of *Research in Comparative and International Education* on 'The Globalization of Assessment: A forum on international tests of student performance' (Vol 8, No.3, 2013) http://img.asercentre.org/docs/Publications/Other%20publications/aser_rcie_fullversion.pdf

- Banerji, R. (2013), "From Schooling to Learning: ASER's Journey in India". In Sir M. Barber and S. Rizvi (Eds.), *Asking More: The Path to Efficacy*. London: Pearson, November 2013. http://efficacy.pearson.com/the-urgent-challenge/asking-more-the-path-to-efficacy/

- Banerji, R., Chavan, M. (2013). "The Bottom Up Push for Quality Education in India". In H. Malone (Ed.), *Leading Educational Change Global Issues, Challenges, and Lessons on Whole-System Reform*. New York: Teachers College Press

Technical papers related to ASER:

- Ramaswami, B., Wadhwa, W. (2010). "Survey Design and Precision Estimates of ASER". ASER Centre working paper. http://img.asercentre.org/docs/Aser%20survey/Technical%20Papers/precisionofaserestimates_ramaswami_wadhwa.pdf

- Vagh, S. B. (2009). "Validating the ASER Testing Tools: Comparisons with Reading Fluency Measures and the Read India Measures". http://img.asercentre.org/docs/Aser%20survey/Tools%20validating_the_aser_testing_tools__oct_2012__2.pdf

- Banerji, R., Bobde, S. (2013). "Evolution of the ASER English Tool". In V. Berry (Ed.), *English Impact Report: Investigating English Language Learning Outcomes in Primary School in Rural India.* London: British Council. http://www.britishcouncil.in/sites/britishcouncil.in2/files/english_impact_report_2013.pdf

Frequently asked questions about ASER

Every year as the ASER process rolls out and as ASER findings are disseminated, people ask many questions. This note is an attempt to answer the frequently asked questions. These have been grouped under four main categories – design and sampling, tools and testing, implementation and impact.

About design and sampling

Why does ASER test children at home and not in school?

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.

What is the sample size of ASER? How does this compare with other large-scale surveys?

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 x 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.

Why does ASER aim to generate 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]

Why does ASER select 30 villages per district and 20 households per village? How are the villages selected?

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.

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[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.

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.

What happens if a village no longer exists, or has become an urban area?

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.

How can I find out which villages have been surveyed?

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.

Do the ASER estimates for a district also apply to individual villages in that district?

No, they don't. ASER estimates for a district are representative at the district level, and provide a snapshot of children's schooling and learning status for the district as a whole. The sampling is not representative at the village level, and the situation in individual villages can be different.

Who designed this sampling strategy?

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).

Why is ASER done every year?

ASER is done every year for several reasons. First, in addition to presenting district, state and national level estimates each year, ASER also presents trends over time. Comparable measurements have to be done periodically in order to see how the situation is changing. The ASER measurement is done annually because government plans and allocations for elementary education are made every year. If children's learning outcomes are to improve, then evidence on how much children are learning needs to be taken into account during the process of review and planning each year.

Second, longer gaps between assessments can have serious implications for children currently in school. It is well known that falling behind in school often leads to dropping out altogether. If several years go by between assessments, opportunities are lost to take rapid corrective action in order to ensure that children who are falling behind are able to catch up.

Third, it takes time to shift the focus from schooling to learning. When ASER began in 2005, the issue of children's learning was rarely discussed. But after eight years of ASER, the topic of children's learning is very much on the national agenda.

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

Why is ASER not done in urban 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.

About tools and testing

Why does ASER only assess reading and arithmetic?

Since its inception, Pratham's work has focused on literacy and arithmetic acquisition. Since the early years of our work we noted that a surprisingly large number of children in primary grades were struggling with reading and basic arithmetic. Difficulties in these two domains prevent children from acquiring skills that are built on the foundational skills of fluent reading, number recognition and basic arithmetic ability and also impact performance in other subject areas. Such difficulties adversely impact children's later academic outcomes. Given these important considerations and since no estimates for learning for early grades were available in India at the time, the assessment of early reading and basic arithmetic ability came to be the primary focus of the ASER survey.

What are the guidelines that are followed in developing the reading and arithmetic assessment tools?

By design ASER is a 'floor' test which aims to evaluate children's early reading and basic arithmetic ability. The reading and arithmetic assessments, first used in 2005, were developed taking into account the state-mandated curriculum for each state. The content of the reading assessment (i.e. the selection of words, the length of sentences and reading passages) was aligned to the Grade 1 and 2 level textbooks in each state. At the letter level, recognition of only simple letter is assessed.[3] At the word level, simple one and two syllable words, commonly used every day and appropriate for Grade 1 are included. In the development of Grade 1 and 2 level passages, orthography-specific indicators such as the use of simple letters, secondary representations of letters, and conjoint letters have been considered along with sentence and passage length. Vocabulary used in the reading passages is aligned to the state-mandated curriculum for appropriateness. In addition, since ASER 2010 we have also calculated the type-token ratios[4] for the reading passages as an additional index to ensure comparability across test forms.

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[3] Secondary forms of letters and conjoint letters are not usually part of the Grade 1 curriculum in most states and hence are not assessed in the ASER reading test.

[4] The type-token ratio indexes the lexical diversity of a text. It is calculated by obtaining a ratio of the total number of unique words in the text (types) to the total number of words in the text (tokens). A higher type-token ratio indexes greater lexical diversity, which is important in the measurement of fluency, as children who read passages with many repetitive words (lower type-token ratio) are likely to have an easier time and read faster than children who read passages that are more lexically diverse (higher type-token ratio) who have to decode a greater number of different words through the passage.

The ASER arithmetic assessment measures children's foundational skills in numeracy such as one and two digit number recognition and the ability to perform basic arithmetic operations such as subtraction (with borrowing) and division (three digit by one digit division). The content of the arithmetic assessment is aligned to Grades 1, 2 and 3 or 4 level state-mandated curriculum.[5]

Are the reading assessments comparable across different languages?

The ASER reading tool is available in 20 languages including English. The ASER reading assessments do not strive to be comparable across languages. The objective is to develop a tool that assesses the most basic foundation skills for literacy acquisition, i.e. letter recognition, the reading of simple words and reading words in connected text that are of Grade 1 and Grade 2 level for each language. Consequently, the inference based on the ASER reading assessment is not about comparing performance across different languages but to evaluate children's level of reading in relation to the state-mandated curriculum for Grades 1 and 2.

Why does ASER test children individually and in an oral format?

Over the last decade, reading has come to be recognized as an important skill. The assessment of early reading can only be done orally and for each child individually. Assessments of early reading ability in other countries are also administered in this format.[6] A typical pen and paper test of comprehension assumes that the child can read. Thus the oral format has emerged as the only way to separate 'reading' and 'comprehension'. A paper-and-pencil test is not a viable option for a child who is a beginning reader or a struggling reader as it places additional cognitive demands on the child to read and comprehend instructions. In ASER, to minimize the cognitive demands of reading and comprehending instructions and to maintain a standard administration approach, both the reading and the arithmetic assessment are administered individually in an oral format. However, children are given a paper and pencil to solve the subtraction and division problems.

Why does the ASER assessment of reading begin at the Grade 1 passage level? Why does the ASER assessment of arithmetic begin at the Grade 2 subtraction level?

The content of the ASER assessments is aligned to Grades 1 and 2 for reading and Grades 1, 2, and 3 or 4 for arithmetic. Since the same assessments are also administered to children in Grade 3 or higher,[7] an adaptive testing approach is used. Administration of the reading test begins at the Grade 1 passage level and the administration of the arithmetic test begins at the Grade 2 subtraction level. If the child performs to a satisfactory standard, the child is given the task at the next level, i.e. Grade 2 passage for reading and Grade 3/4 level division for arithmetic. If the child does not perform to a satisfactory standard, the child is given the task at the lower level, i.e. reading simple words for reading and two digit number recognition for arithmetic. Hence, the level of the task administered is adapted to match the child's ability level. In this administration format each child attempts only two or three tasks for each assessment instead of all four tasks, making the assessment quicker to administer without compromising the objective of identifying the child's reading and arithmetic level.

Why does the arithmetic testing process not include addition or multiplication?

Pratham's large scale experience of working with children indicates that when children are given all four basic numeric operations (addition, subtraction, multiplication and division), practically every child who could do subtraction (2 digit operations with borrowing) could also do addition with carry over. Similarly with division and multiplication. These trends were also observed in preparatory work done for the ASER survey and in other data collection efforts.

Why are all children in the age group 5 to 16 assessed with the same tools? Why does ASER not assess children at their grade level?

All children are assessed with the same tools as the objective of the ASER survey is to ascertain whether or not children have attained early foundational skills in reading and arithmetic. This is irrespective of age or grade

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[5] Three digit by one digit numerical division is expected of children in Grade 3 in some states and Grade 4 in other states.

[6] For example the Early Grade Reading Assessment (EGRA) and the Dynamic Indicators of Basic Literacy Skills (DIBELS, developed by the University of Oregon Center on Teaching and Learning).

[7] In ASER 2013, for example, 76% of all children tested were in Grade 3 or higher.

level. It is not designed to be a grade-appropriate assessment but rather it is designed to provide an understanding of school-aged children's early reading and basic arithmetic ability.

What do we know about the reliability and validity of the ASER assessments?

Reliability is the consistency with which a test measures any given skill and thereby enables us to consistently distinguish between individuals of differing ability levels. Given that the ASER assessments evaluate mastery at different reading and arithmetic levels, reliability here is the consistency of the decision-making process. Validity indicates whether the test measures what it purports to measure – in other words, is the inference based on the ASER reading assessment about children's mastery or non-mastery of basic reading ability valid? Is the inference based on the ASER math assessment about children's mastery or non-mastery of basic math ability valid?

Three studies were conducted to explore the question of reliability and validity of ASER measurements. The findings from these studies provide favourable empirical evidence for the reliability and validity of the ASER assessments. The findings indicate (a) substantial reliability of decisions across repeated measurements, i.e. consistency in the level assigned to a child assessed by the same examiner on two different occasions, and (b) satisfactory inter-rater reliability, i.e. consistency in the level assigned to a child assessed by different examiners.[8]

In 2010, an impact evaluation study of Pratham's Read India program was conducted by Abdul Jameel Poverty Action Lab (J-PAL). In this evaluation, the measurement of children's learning outcomes included several literacy and arithmetic assessments including the ASER reading and arithmetic assessments. This allowed us to correlate children's performance on the ASER assessments with the additional assessments of reading and arithmetic. This empirical study provided compelling evidence for the validity of the ASER assessments.[9]

About implementation

Why does ASER use volunteers? Are the volunteers capable and well trained to do the survey?

ASER is a citizens' initiative, implemented by partner organizations in every rural district across the country. One of the major aims of the survey is to generate awareness and mobilize people around the issue of children's learning. The entire design of ASER thus revolves around the fact that it aims to reach and involve 'ordinary people' rather than experts. All tools and procedures are designed to be simple to understand, quick to do, and easy to communicate.

Procedures for ensuring the quality of data have evolved over several years. Typically ASER volunteers are given 3 days of training. One of these days is spent practicing all ASER steps and procedures in the field. At the end of the training, a quiz is conducted to ensure that volunteers have understood the key elements of ASER. In addition, volunteers are monitored when the survey is in the field; and a substantial proportion of villages are rechecked by ASER teams. In ASER 2013, for example, more than half of all surveyed villages were either monitored or rechecked or both.

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[8] The full paper is available at http://www.asercentre.org/p/113.html

[9] The main findings from the study of validity of the ASER assessments are summarized here: For reading, there was a very strong association between children's performance on the ASER reading assessment and the concurrently administered assessment of early reading ability modelled on the Early Grade Reading Assessment (EGRA). EGRA is a timed assessment of fluency in reading letters, words, and passages and its score notes the total number of a letters or words read correctly in a minute. While the ASER is a short test requiring children to read 5 letters or 5 words at the letter and word level respectively, the EGRA comprises 52 letters and 52 words on the letter and Word Reading Fluency subtests respectively. Despite these differences in test length, administration, and scoring procedures, a high level of consistency was noted across the ASER reading assessment and the EGRA in classifying children at the 'nothing', 'letter', and 'word' level. For instance, children who were categorized at the 'letter' level were more likely to correctly identify 4 or more letters on the EGRA. In addition, fluency rates of children classified at the 'letter' level were found to be lower than the fluency rates of children classified at the 'word' or higher levels. The ASER arithmetic assessment was also found to be (a) strongly correlated with the paper-and-pencil mathematic assessment used in this evaluation and (b) more closely correlated with the paper-and-pencil mathematic assessment than with the assessments of literacy. These findings provide favourable evidence for validity.

Who funds ASER?

ASER is a citizens' initiative, designed by Pratham/ASER Centre[10] and implemented each year by partner organizations in every rural district. Approximately 25,000 volunteers participate in ASER each year. People who conduct ASER each year donate their time to ASER and are compensated only for their local travel and food costs. The ASER survey receives its support from a variety of sources including foundations, development agencies and corporates. A substantial portion of the funding also comes from individuals. Each year the names of the partner organizations and sources of support are listed in the ASER report. ASER does not receive funding from any government institution.

About impact

What impact has ASER had?

In 2005, when ASER began, most people from parents to governments were concerned with getting children into school. The assumption was that if children were in school, they must be learning. Today, the fact that large proportions of children are not learning even the basics is widely recognized. For example, ASER has been cited in major Government of India documents such as the XI and XII Five Year Plan and the Economic Survey of India. Many state governments are now implementing their own learning assessments, and some are implementing programs aimed at improving learning outcomes. Media coverage of ASER in international, national, regional and state media, in both English and regional languages, is enormous and growing each year. In the last few years, questions have been raised in Parliament about children's learning. Every year increasing numbers of government teacher training colleges are participating in the ASER survey. Overall, ASER has had a major influence in bringing the issue of learning to the centre of the stage in discussions and debates on education in India.

In addition, the ASER model is increasingly being recognized on global education platforms. In the lead up to the establishment of the post 2015 Millennium Development Goals, members of the extended ASER network in many countries have made concerted efforts to ensure that indicators of learning and not just schooling are included in the new MDGs. ASER and ASER like initiatives are mentioned in documents of Global Monitoring Report brought out by UNESCO and the Learning Metrics Task Force (coordinated by Brookings Institution and UNESCO Institute of Statistics). And the importance of large-scale community-based assessment carried out by citizens is beginning to be recognized in international policy and advocacy circles as a viable alternative to other existing assessment models.

A great deal remains to be done to ensure that every child in India is in school and learning well. But the first step is for the problem to be recognized. The second step is to have reliable evidence on the nature and extent of the problem. Only then can workable solutions be found.

Has ASER had an impact in other countries as well?

Yes, it has. The simplicity of ASER's tools and processes coupled with the rigour of its sampling methodology and low cost makes it an interesting option for many countries with contexts similar to India. The ASER methodology has spread organically to several other countries, all of which follow the same set of basic guiding principles while adapting the model to their own context. There is an ASER in Pakistan, conducted since 2008. The initiative is called Uwezo in East Africa (Kenya, Tanzania, Uganda), where it has been implemented since 2009. In Mali, the Beekungo initiative began in 2011 and Jangandoo in Senegal in 2012. Mexico will be piloting the Medición Independiente de Aprendizaje in 2014, and several other countries in Asia, Africa and South America have expressed interest in learning more about the model.

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[10] ASER Centre is an autonomous research and assessment unit of Pratham.

ASER 2012 featured in 15 questions in Parliament from February to March 2013

(4 times in Lok Sabha and 11 times in Rajya Sabha)

As many as 15 Members of Parliament asked questions in the 2013 Winter session of the Parliament with reference to the ASER 2012 report of a decline in learning levels since 2009-10. One such Q&A exchange is reproduced below. Responses to the other questions were similar.

We find the response from MHRD unacceptable, even bordering on misleading. The question is clearly about declining learning levels measured by ASER. In response MHRD talks about three surveys. Of these, two were conducted in 2001-02 and 2005-06, several years before ASER noted a decline in learning levels. The third survey, which was conducted in 2010-11, was based on a new methodology for data analysis. Hence, by NCERT's own statement in the report published in 2012, its results are not comparable with the previous survey of 2005-06. However, they seem to have somehow come up with results that show improvement. MHRD claims that NCERT uses 'rigorous' and 'detailed' methods, which have interestingly resulted in Uttar Pradesh topping the list in learning achievement by a wide margin over other states.

A detailed comparison of ASER and NCERT's Achievement Surveys is provided the following pages.

Question by	Question	Response by and Date	Response
Vivek Gupta (Member of Parliament, Rajya Sabha)	(a) whether Government is aware of the Annual Status of Education Report (ASER) of 2012, which states that the learning outcomes of children is on the decline to the extent that more than half of all children in standard V are at least three grade levels behind where they should be, in terms of reading ability; (b) whether the Right to Education Act fails to give provisions, how quality of education imparted and attained, should be measured; (c) whether Government is considering the much needed amendments to the Right to Education Act, to include therein the aspect of quality of school education;and (d) if so, the details thereof?	Honourable Minister of State in the Ministry of HRD Dr. Shashi Tharoor on 08.03.2013	(a): The Annual Status of Education Report (ASER), w hich is an assessment brought out annually by PRATHAM, a non-governmental organization, expresses concern regarding the learning levels of children in schools in rural areas. However, the National Council of Educational Research and Training (NCERT), which uses a rigorous research methodology, conducts very detailed periodic national surveys of the learning achievements of children in classes – III, V and VIII. Two rounds of National Learners' Achievement Surveys have been completed by the NCERT which have revealed improvements in the overall learning levels, even though achievements remain low. The findings of the third round conducted recently for class V also indicate that there is enhancement in the level of achievement in most States. (b) to (d): The Right of Children to Free and Compulsory Education (RTE) Act, 2009 provides for a system of Continuous and Comprehensive Evaluation (CCE) of the child's understanding of knowledge and his/ her ability to apply the same. The Act places an obligation on the teacher to assess the learning ability of each child and provide additional instructions, if required. The NCERT has developed guidance material on the CCE which has been shared with the States. As of now, 22 States / UTs have reported that they are implementing the system of CCE.

Comparison of ASER survey and NCERT's National Achievement Survey (NAS)-Class V

Currently two large-scale learning assessments are conducted in India. Pratham/ASER Centre's Annual Status of Education Report (ASER) has been brought out annually since 2005. NCERT's National Achievement Survey (NAS) is conducted every three years, beginning in 2001-2002 for different grade levels.

ASER and NAS are designed for different purposes and employ different methodologies. This note describes and compares these methodologies so that informed conclusions can be reached. The note is based on ASER 2005-2012[1] and the NAS report for Class V, Cycle 3, 2010-2011 released in 2012. [2]

Objectives, sampling and coverage

ASER is designed to generate district, state, and national level estimates of children's schooling status for all children age 3-16, and estimates of basic ability in reading and arithmetic for all children age 5-16. It is designed as a household-based survey so as to include all children: those enrolled in government schools, private schools, other types of schools, and those not enrolled in school.

ASER aims to cover all rural districts each year. It employs a two-stage sample design. At the first stage, 30 villages are selected in each rural district from the Census 2001 directory using Probability Proportional to Size (PPS). In the second stage, 20 households in each village are randomly selected. All children age 3-16 in sampled households are surveyed. All children age 5-16 are assessed.

ASER 2012 reached 331,490 households in 568 districts. 595,139 children in the age group 3-16 were surveyed and 448,467 children age 5-16 were assessed.

NAS-Class V aims to " provide reliable information on the achievement of students in the elementary sector of education in government and government-aided schools" (p.3). It is a school-based survey intended to assess grade level competencies of children enrolled in Std. V in government and government-aided schools.

NAS aims to cover all 35 states and Union Territories. It employs a three-stage cluster design (p.11). In the first stage, districts are selected using PPS. In the second stage, schools within sampled districts are selected, again using PPS. In the third stage, students are randomly selected within sampled schools.

DISE 2007-08 was used as sample frame for NAS-Class V. The report notes significant discrepancies between DISE data and actual school enrolments (p.22). NAS-Class V, Cycle 3 was implemented in 31 states and Union Territories. It covered 122,543 children from 6,602 urban and rural schools across 27 states and 4 Union Territories. (p.1)

Tools and testing

ASER assesses early reading and basic arithmetic ability, which are foundational skills fundamental to literacy and numeracy acquisition. Early reading ability implies the acquisition of letter knowledge, ability to decode Std. 1 and 2 level words and fluently read Std. 1 and 2 level passages. ASER tools are designed to assess mastery of these foundational skills and are not intended to differentiate within each mastery level. For instance, amongst the group of children identified as fluent readers of Std. 2 level text, the ASER assessments are not designed to differentiate between their ability to read and to comprehend.

The highest level tested in reading is a Std. II level text. The highest level tested in arithmetic is a 3-digit by 1-digit division problem, usually taught in Std. III or IV. Tools and testing procedures are available in the public domain.

NAS-Class V assessed grade level competencies of Std. V students in language (including reading comprehension), mathematics and environmental science (p.3). NAS-Class V, cycle 3 test forms are based on common core content and competencies identified from an analysis of state textbooks (p.4). 40 multiple choice test items were constructed for each subject. The language test additionally included a writing task (p.10). Tools, testing procedures, and grading rubrics for the writing task are not in the public domain.

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[1] See www.asercentre.org for ASER reports from 2005 to 2012 and additional details on methodology.
[2] See www.ssatcfund.org/Home/Publications.aspx for the NAS-Class V report for cycle 3, which used a different methodology from earlier cycles. All page numbers referred to in this note refer to this report.

Test administration

ASER is a household survey. ASER reading and arithmetic assessments are administered one on one in an oral format. Children are tested at home. All children are given the same test, regardless of age or grade.

NAS-Class V is a pen and paper test administered to a group of students in school.[3] In most schools, children were tested in two out of the three subjects (p.177). The cover of the test booklet has instructions for students indicating how to record or modify their responses (p.11).

Process implementation and monitoring

ASER is conducted each year by surveyors from partner organizations in each district. These include DIETs, teacher training colleges, universities, NGOs and others. Surveyors receive intensive three-day training in preparation for the survey, including a full day of practice in the field. ASER devotes considerable time and effort to ensuring data quality through carefully designed and implemented training, monitoring, and recheck procedures, details of which are provided in each year's ASER report and on the ASER Centre website.

In addition to an assessment of surveyors' understanding of the process before the survey rollout, quality checks comprise two main processes: monitoring of survey teams during the actual field survey, and recheck of data after the survey has been conducted. These processes are implemented by the central and state ASER teams and Master Trainers in each state. In ASER 2012, more than half of all villages were monitored and/or rechecked. External process audits of the ASER field work and data collection process are also conducted periodically.

NAS-Class V was coordinated by state agencies like SCERTs and SIEs (p.16). Data collection was done by DIET students. The report notes the possibility of insufficient training and practice given to field investigators (p.22). The training manual is not in the public domain. No information on recheck procedures is available in the report.

Accuracy of estimates

ASER estimates are self-weighting at the district level. At the state and national levels, estimates are weighted by the appropriate population weights.

ASER does not report standard errors and margins of error for its state and national estimates. However, a study done on the precision of ASER learning and enrollment estimates shows that margins of error are well within 5% at the state level.[4] In addition, a detailed check of sample sizes is done for smaller states where sample sizes can be small for some sub-populations. Where the number of observations in the sample is found to be insufficient, estimates are not presented in the report.

Since 2011 ASER reports also present estimates at divisional levels. These estimates are presented with the associated standard errors and margin of error.

NAS-Class V estimates are not weighted. The report notes: "Unfortunately, due to discrepancies in the DISE data, limitations in the sampling method and loss of information at the sampling and administration stages of the survey, it was impossible to estimate sample weights for the survey. Therefore, student responses of class V (NAS) data were equally weighted within their state/UT data and each state/UT carried equal weight as a reporting unit" (p.178). The report notes that this posed problems for aggregation of data and generation of estimates (p.178-179). In particular, it states, "It is important to note that such results are not the average for the pupils nationally since states with larger populations are not weighted more highly, as they would be, for a national or group pupil average" (p.179).

The NAS-Class V report presents the standard errors associated with the estimates that are reported.

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[3] The NAS-Class V report states that within each school, children were selected from class registers using simple random sampling (implemented via a lottery). This seems to imply that only children present in school on the day of the test were included (p.177).
[4] Ramaswami and Wadhwa 2010, "Survey Design and Precision of ASER Estimates". Available at http://img.asercentre.org/docs/Aser%20survey/Technical%20Papers/precisionofaserestimates_ramaswami_wadhwa.pdf

Availability of results

ASER findings are made available in the same school year that the fieldwork was conducted. The survey is conducted between September and November of each year and the report is published the following January. District, divisional, state, and national level estimates are in the public domain.

NAS-Class V report was released in July 2012. Fieldwork was conducted between November 2010 and March 2011. (p.xxi)

Test reliability and validity

ASER tests assess achievement of mastery rather than the relative standing of children in relation to their peers. Reliability in this case refers to the consistency of the decision-making process in assigning children to a mastery level across repeated administrations of the test. In addition, since examiners assign each child to a mastery level, it is important to also estimate the consistency of the decision-making process across examiners, which in technical terms is referred to as inter-rater reliability. A series of studies[5] indicate substantial reliability of decisions across repeated measurements (test-retest) and satisfactory inter-rater reliability.[6]

The validity of the ASER reading test (that is, whether the test actually measures the constructs it is intended to measure) was examined using the Fluency Battery as a criterion measure for estimating the validity of the ASER Hindi language tool. The Fluency Battery is a test of early reading ability adapted from the Early Grade Reading Assessment (USAID, 2009) and the Dynamic Indicators of Basic Early Literacy Skills (University of Oregon Center on Teaching and Learning, 2002). The Fluency Battery is a test of early reading ability similar to the ASER language tool, but it is a longer and more detailed assessment comprising 6 subtests. Children's reading is timed using a stopwatch and scores represent number of units (akshars/words/nonwords) read accurately in one minute. The ASER language assessment is strongly associated with the Fluency Battery. The magnitude of the correlation coefficients range from .90 to .94 (a correlation coefficient of 1 indexes a perfect and positive association between two measures).[7]

NAS-Class V report does not discuss validity or reliability of the tests utilized.

Comparisons over time

ASER has used the same sampling and assessment procedures since 2007. The reading assessment tool has not changed since 2005. All estimates generated since 2007 are comparable.

NAS-Class V, cycle 3, used Item Response Theory (IRT) to analyse the data, unlike earlier two cycles of the survey which used Classical Test Theory (CTT) (p.17). The report points out that the results of the most recent cycle are therefore not comparable with earlier years. (p.23)

Conclusions

ASER and NAS surveys are very different in test content, methodology, sampling, purpose, and years for which the results are reported. More importantly, the results are also computed very differently. Since estimates generated by each of these assessments neither cover the same populations nor assess the same content, their results are not comparable.

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[5] http://img.asercentre.org/docs/Aser%20survey/Tools%20validating_the_aser_testing_tools__oct_2012__2.pdf
[6] The test-retest correlation coefficients for the ASER-reading test for all children from Grades 1-5 is .95 and for the ASER math test is .90. More importantly the average Cohen's kappa estimate for decision consistency across repeated test administrations for the ASER-reading test is .76 and for the ASER-math test is .71.The inter-rater reliability estimated using Cohen's Kappa for a group of 590 children is .64 for the ASER reading test and .65 for the ASER-math test on average, also indicating 'substantial' agreement. The average and median weighted Kappa across all pairs of examiners is .82 and .81 respectively for the ASER-reading test and is .79 and .80 for the ASER-math test indicating 'almost perfect' agreement for the ASER-reading test and 'substantial' agreement for the ASER-math test.
[7] http://img.asercentre.org/docs/Aser%20survey/Tools%20validating_the_aser_testing_tools__oct_2012__2.pdf