

About ASER 2017 Beyond Basics



Portraits of youth: Deimon Sutnag

Deimon Sutnag is a 15-year old boy, one among four brothers and four sisters. He is currently in Std IX and attends a private school in Jowai, Meghalaya. His daily commute to the school takes approximately 30 minutes in a school bus.

Deimon doesn't play any sport. But he likes dancing and singing. He enjoys Bollywood music and names Alan Walker as one of his favourite musicians.

Like all the children in the house, Deimon participates in household chores. He helps wash clothes and clean around the house. He also fetches water twice a day from the communal water source, situated towards one end of the village.



Evolution of the 'Beyond Basics' package

Broadly, the ASER 2017 'Beyond Basics' package was developed through a 3-step process.

1. Literature review: This involved reviewing and documenting policies and existing studies on domains covered under 'Beyond Basics' or relating to the relevant age group.
2. Field-based fact finding: Because ASER is conducted across the country, this was done to ensure that each component was informed by a local context. Local terminology for measurement units, publicly available reading materials, and ways in which young people use math in their daily lives are a few examples of what was explored.
3. Field pilots to refine tools: Versions of each survey component were piloted to ensure that the final instruments captured what we intended to measure and were also easy to administer. Teams were trained before each pilot and feedback was taken after each. Based on feedback and pilot data analysis, instruments were refined further. Efforts were made to conduct pilots in different states, to ensure that survey processes and questions were relevant across the country.

Based on learnings through this year and a half long process, some key turning points in the survey's design were:

- Design of the testing tool: The first phase of the tool development process began in early 2016 with a detailed analysis of curricular expectations. Early iterations of the testing tool were pen-paper based, and included largely academic questions. However, ASER's household-based model did not provide the required environment for the youth to perform at their best on such a test. More importantly, the traditional pen-paper format failed to engage the interest of the community, a key aspect of ASER's design. So we moved to a pictorial tool with functional questions that depicted situations experienced in daily life, which generated interest and engagement among those observing the process. Additionally, this design did not assume fluency in reading and was thus suitable for use with all youth, regardless of their reading ability.
- Age group: Initially, the target age group was kept broad, covering youth between 10 and 18 years old. Over time, this was narrowed down to the 'gap years' of 14-18 - the interim period between the mandatory eight years of schooling under the RTE Act and adulthood.
- Scope: For a deeper understanding of the status of the youth, the scope of the survey was expanded beyond Activity and Ability, to self-reported aspects of Awareness and Aspirations.
- Dropped components: Few components that had been piloted were subsequently dropped from the survey. For instance, we experimented with a school observation format to observe facilities in secondary and senior secondary schools, and attempted to map access to educational facilities outside the village. However, unlike primary schools which are found in almost all villages across the country, at higher levels of education these are often not available within sampled villages. Logistical constraints like surveyor fatigue, limited time, and limited monetary resources led us to drop these components.

Timeline

Pilots 1-3

The initial pilots were geared towards determining the scope of the survey, with a focus on fundamental elements like the assessment tool and the target age group.

Age 10-18
 Age 12-18
 Age 14-18



Pilot 4

With a first version of each survey instrument and tool prepared, the entire survey was conducted in 50 villages in Gaya, Bihar to generate sub-divisional estimates.

50 Villages

Pilot 5

To ensure feasibility as a citizen-led assessment, volunteers from a local partner institute were trained to conduct the survey and district level estimates were generated for Ahmednagar, Maharashtra.



Pilots 6-7

With the fundamentals in place, we began to explore new domains. Across the country, teams spent three days in a single village, speaking at length with many, if not all, youth. These open-ended interactions aimed to get to know these youth: what they do, how they think, what they envisage for themselves, and what opportunities are available to them.

Pilots 8-11

Through these pilots we:

- Experimented with new pieces like observing school facilities, mapping access to educational facilities outside the village, collecting information on streams and school fees, and capturing broad trends of the aspirations of the youth.
- Piloted logistical aspects like completing the survey in a given duration and compiling a survey pack that is easy to administer.
- Experimented with collecting data digitally on tablets, instead of using paper formats.
- Refined and finalized each survey component.



Pilot 12

Final version of the package piloted in each surveyed state.



A six day long national level preparatory workshop was held where ASER central and state team members were trained on 'Beyond Basics' survey formats and processes, including quality control processes. The survey took place from October to December 2017.

Summary of the ASER 2017 survey process

The ASER 'Beyond Basics' survey is done over 3 days in a village. The first day of the survey is usually a Friday, followed by Saturday and Sunday.

A team of two surveyors (preferably one male and one female) goes to the village assigned to them by the ASER state team. They take the survey pack given to them in the training.



Once in the village, the surveyors *meet the Sarpanch/village representative* and do the following:

- Clearly explain what ASER 2017 is about and why it is important.
- Give him/her the 'Letter for Sarpanch' and ask for his/her support to conduct the survey in the village.



The surveyors then *walk around the entire village* and do the following:

- Fill the Village Information Sheet, based on what they observe in the village.
- Make a rough map of the village, marking the important landmarks in the village. Once the surveyors have walked around the entire village, they make a final map in the Village Booklet.

For more details, see pages 28-30



Next, the surveyors *select households to survey*. They:

- Divide the map into 4 sections or select 4 hamlets.
- Randomly select 4 households with resident youth (14-18 years) from each hamlet/section using the 'every 5th household rule'.
- Follow this process until they have randomly selected a total of 16 households with resident youth in the entire village.
- In each household approached while selecting households to survey, record some basic information about that household.



In each of the 16 households with resident youth that have been randomly selected for the survey, surveyors:

- Record information about the resident youth's activity.
- Ask questions to the youth about their aspirations, exposure to digital and financial spheres and familiarity with contexts beyond their immediate environment.
- Conduct a learning assessment.
- Record information about household assets.

For more details, see pages 31-46



After all 16 households are surveyed, the surveyors check the survey booklet for completeness and then submit it to the ASER team.

These stages of the survey are described in the following pages.

Collecting village-level information

The village authorities are first apprised of the purpose and process of the ASER survey. Surveyors then walk through the entire village, recording some of its key characteristics and make a map of its layout. This process serves several purposes:

- It enables the survey team to understand the distribution of households in the village, which is an essential first step before randomly selecting households to survey. For example, surveyors check whether the village is divided into hamlets and if so, how many and where.
- It enables the surveyors to collect basic information about the village such as connectivity and amenities. This information is later aggregated and used to generate a sample description of surveyed villages.
- It enables the survey team to record basic locational information for each household surveyed, which facilitates the subsequent recheck process. The hamlet number for each surveyed household is recorded such that its general location can be identified on the village map.
- The process of walking around the village enables the surveyors to meet and talk to several people. This is an important part of generating community engagement and interest in the process.

Format 1: Sample village information sheet

VILLAGE INFORMATION SHEET													
Sarada			Village name: Neelampur										
Please tick (✓) the relevant box			Did you see the following facilities/services in the village yourself? (Tick Yes/No based on your own observation)										
Road leading to the village?			Yes ✓					No					
Public transport available to the village?			Yes ✓					No					
Any type of health centre (any type) in the village?			Yes					No					
Any type of library in the village?			Yes					No					
Computer centre/internet cafe in the village?			Yes					No					
For each government school in the village, tick (✓) the lowest and highest Std. in the school													
	Pre-primary	Std. 1	Std. 2	Std. 3	Std. 4	Std. 5	Std. 6	Std. 7	Std. 8	Std. 9	Std. 10	Std. 11	Std. 12
Government school - 1		✓				✓							
Government school - 2		✓							✓				
Government school - 3													
Government school - 4													
Government school - 5													
Is there a school having classes 9 and 10 in the village?			Yes					No					
Is there a school having classes 11 and 12 in the village?			Yes					No					
Is there a tuition/coaching centre in the village?			Yes					No					
Is there a technical/College/Skills Centre (any) in the village?			Yes					No					

Format 2: Sample village map



Collecting information from sampled youth

Information on sampled youth in the age group 14-18 years was collected in 4 domains. These were:

- **Activity:** What are the youth currently doing? Are they enrolled in school or college, working, taking vocational training, preparing for entrance exams? Or some combination of these activities?
- **Ability:** Can they apply basic reading and arithmetic abilities to everyday situations? Can they do simple financial calculations?
- **Awareness and exposure:** What do youth report in terms of their exposure to media? Are they familiar with common digital and financial instruments and processes?
- **Aspirations:** What do youth in this age group report as their educational and career goals?

These are described individually below.

Activity

Unlike younger children, whose activities are usually limited to being either in school or at home, capturing the activities of youth in the ASER 2017 target age group of 14-18 years is a far more complex task.

First, the variety of activities youth could potentially be involved in is far greater. For example, they could be in school, in college, working, taking vocational training or courses, or preparing for entrance examinations.

Second, each of these categories covers a variety of possible situations. For example, if youth are working, they could be working on the family farm or in an external job; or perhaps doing both. Vocational training could vary in duration from a few weeks to multiple years. In many cases, presenting meaningful descriptions of what youth are doing required additional detailing of these broad activity categories.

Third, a youth could be engaged in more than one activity. For example, a youth could be both studying and working or both studying and taking vocational training. In other words, these are not mutually exclusive activities.

In an effort to account for this diversity of situations, all youth were asked about their participation in each of the following five categories of activity:

- *Enrollment in school or college*

For the purposes of this report, school enrollment includes enrollment upto Std XII, regardless of whether Std XI and XII are offered in high school or in college¹. College enrollment is defined as enrollment in undergraduate or other courses which include certificate or diploma courses. Information on vocational training courses was collected separately and is not included here.

- *Tuition/Coaching*

This category includes paid classes to supplement studying at school or to prepare for a competitive exam. Youth could be taking tuition or coaching classes whether or not they were formally enrolled in an educational institution.

- *Exam preparation*

Youth in this age group are sometimes found preparing for education or job related exams such as NEET or UPSC. Again, this activity is independent of their enrollment status and was recorded separately. However, this excluded routine school/college exams, board exams and exams from open school.

- *Vocational training/other classes or courses*

¹ In some states, Std XI and XII are offered in senior secondary schools, while in others they are offered in colleges and called by different names.

Youth in the 14-18 age group could be doing many different kinds of courses, ranging from structured, formal courses such as those taught at ITIs or polytechnics; to more informal ones like stitching classes at a local training centre. The survey captured youth participation in all these types of courses, specifying only that they should provide hands-on training with a focus on employability. Therefore, although many youth take hobby classes such as music and dance, these are not included here. In all cases information on the duration of the training was also recorded.

■ *Work*

Older youth often participate routinely in household chores, and additionally could be doing what is normally categorized as 'work', whether on the family farm/enterprise or elsewhere. Under this head, therefore, information was collected separately for household work like fetching water or shopping for the household, when done daily; and for other kinds of work, such as on a farm or family enterprise.

In the case of non-household work, information was collected only if the youth had worked for more than 15 days in the past month; and only the youth's primary work (on which the most time was spent) was recorded.

Working youth were also asked about payment; but in these questions only monetary payment was considered.

Aspirations

Sampled youth were also asked a series of questions intended to provide insight into other aspects of their lives. This segment of the survey comprised a questionnaire; however, surveyors were trained to ask these questions in a conversational, rather than survey style in order to obtain more authentic responses from sampled youth, and practiced doing so during the training. A series of interlinked questions aimed to understand the youth's educational and career goals. The surveyors then slotted the youth's responses into the appropriate response option on the questionnaire.

The intentionally open-ended nature of these questions meant that it was possible to obtain a wide variety of responses to them. For each such question, multiple pilots conducted over the course of the last year enabled us to identify the responses that were most frequently obtained across the country, and these were used to establish the primary response options on the questionnaire. An open-ended 'Other' option enabled surveyors to write down responses that did not fit within any of the response categories provided.

Awareness

Access to and familiarity with the financial and digital worlds are key components of productivity in the 21st century landscape, and recent years have seen significant changes in the policy landscape in India in this regard. The objective of this set of questions was to understand the extent to which sampled youth are aware of and familiar with some basic dimensions of these sectors. Specifically, information was recorded on youth's:

- Usage of mobile phones, internet, TV, computer, etc.
- Familiarity with basic digital and financial instruments and processes
- Awareness of major vocational training alternatives, such as ITIs and Polytechnics
- Exposure to urban centres

Format 3: Sample youth information sheet: Youth activity

1. General information											
14	2	12-11-17	3:05 pm	1	Jamun Kumari	Age 16	Sex	M	F	Devki Rani	
Date of survey				Youth S.No.		Name of youth (aged 14-18 years, regularly living in the household)		Age		Mother's name	
2. Enrollment											
2a. If currently enrolled in school/college											
In school	In college (Do not include III/Poly/technic)	What is the course (tick one option)		What is the course duration? (Write in months)		Type of school/college		Is your enrollment in school/college via open school/distance learning/correspondence?		How many minutes does it take you to travel from home to school/college? (Write only number)	
10	Undergraduate degree (UG)	Certificate/Diploma	Other	10	12	Government	Private	Other	Yes	No	30
2b. If not currently enrolled in school/college											
Why are you not currently enrolled in school/college? (Multiple ticks allowed)		Details of past enrollment		Were you ever enrolled in school/college?		What Std. did you complete before leaving school/college?		In which year did you leave school/college?		School/college too far/inaccessible	
No response		No response		Yes		No		No		No	
3. Tuition/Coaching											
Do you currently attend any paid tuition or coaching?		If yes, How much is paid for tuitions and/or coaching per month?		Are you currently preparing for any exam(s)? (Do not include routine school exams/board exams/college exams here)		Is this exam education or job related? (Multiple ticks allowed)		What exam(s) are you preparing for? (Write)		If yes, What is the course duration? (Write in months)	
Yes		250		Yes		No		Education		Job	
4. Exams											
Are you currently preparing for any exam(s)? (Do not include routine school exams/board exams/college exams here)											
Is this exam education or job related? (Multiple ticks allowed)											
What exam(s) are you preparing for? (Write)											
5. Vocational training/Other classes or courses											
Are you currently taking vocational training like at an ITI, Poly/technic, etc. or other classes like: computer, stitching, etc.?											
Yes											
No											
Type of institution											
Govt.											
Pvt.											
Other											

Do you do any household work daily? (Like cooking, cleaning, household shopping, etc.)	Yes	<input checked="" type="checkbox"/>	Have you done any other work regularly (more than 15 days) in the past one month? (Like: working on farm, helping in family enterprise, etc.)	Yes	<input checked="" type="checkbox"/>	What kind of work? (Tick one option, for primary work only)	If yes,		Are you/will you be paid money for this work? (Tick one option)				Are you currently married?		Till which Std. has your mother completed her studies?	Till which Std. has your father completed his studies?		
	No	<input type="checkbox"/>		No	<input type="checkbox"/>		Agricultural/related work	Family or own	Working for someone else	Non-agricultural work	Family or own enterprise	Working for someone else	No	Yes, on a daily basis	Yes, regularly (weekly, monthly etc.)	Other	Yes, and living with spouse	Yes, but not living with spouse
Note:																		

Format 4: Sample youth information sheet: Aspirations and awareness

PFT No. 14 Hamlet No. 2 Youth S.No. 1 Block Name: Y. W. W. W.
 Name of Youth Jamun Kumari Village name: Nelampur

Q.1 If you were given the opportunity, what is the highest level you would like to study till (like 12th, graduation, etc.?) (Tick one option. Do not read out the options.)
 1. Std.10
 2. Std.12
 3. Courses less than graduation, like ITI/diploma
 4. Graduation (BA, B.Sc., etc.)
 5. Higher than graduation (MA, M.Sc., PhD, etc.)
 6. Do not want to study more
 7. Other
 8. Don't know

(Have a conversation with the youth about what she would like to do in the future. Depending on the responses, tick the answers to questions 2a-2c. Do not read out the options. If necessary, probe for more information.)

Q.2a After completing your studies or in the future, what would you like to do as your primary work? (Tick one option)
 1. Army/police
 2. Teacher
 3. Doctor/nurse
 4. Engineer
 5. Any government job
 6. Any private job
 7. Sports
 8. Own or family agriculture/allied
 9. Someone else's agriculture/allied
 10. Own or family enterprise
 11. Other _____
 12. Household work
 13. Don't know/have not thought about it
 14. Don't want to work

(If the youth selected option 1-11 above, then ask question 2b and 2c.)

Q.2b How will you prepare for this job? (Multiple ticks allowed)
 1. Study further
 2. Sit for an exam
 3. Training/apprenticeship
 4. Other
 5. Don't know

Q.2c Do you know anyone who does this work? (Multiple ticks allowed)
 1. Mother or father
 2. Someone else in the household
 3. A relative other than the ones residing in my house
 4. A friend
 5. Someone in the school or village (other than friends)

	Yes	No	If no, then when did you last use one? Less than 1 month	1 to 6 months	More than 6 months to 1 year	Never
a. Used a mobile phone?	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
b. Used internet?	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	
c. Watched TV?	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
d. Used a laptop or computer?	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
e. Listened to radio/FM?	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
f. Read a newspaper, magazine or a book other than a textbook?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			

Q.4 Do you have your own bank account?
 1. Yes
 2. No
 3. Don't know/not sure

Q.5 Have you ever deposited or withdrawn money from your own or someone else's account by going to the bank?
 1. Yes
 2. No

Q.6 Have you ever used an ATM or a debit card?
 1. Yes
 2. No

Q.7 Have you ever done a transaction using Bhim App/mobile banking/PayTM or internet banking?
 1. Yes
 2. No

Q.8a Have you heard of ITI/Polytechnic colleges?
 1. Yes
 2. No

Q.8b If yes, do you know where your nearest ITI/Polytechnic college is located?
 1. Yes
 2. No

Q.8c What can one learn there? (Do not prompt. Tick "could answer" if youth mentions skills, skilling, vocational, apprenticeship, etc.)

Q.9b If yes, then what was the course? _____

Q.10 Have you ever been to _____ [name of district headquarter]?

1. Yes
 2. No
 3. Don't know/not sure

Q.11a Have you ever been to a big city?

1. Yes
 2. No
 3. Don't know/not sure

Q.11b If yes, then which is the biggest city you have visited? Ahmedabad

Q.12a Have you ever been outside your village without any family members?

1. Yes
 2. No

Q.12b If yes, have you travelled in shared public transport (eg. bus, train, etc.) without family members?

1. Yes
 2. No

Q.13 Would you be willing to go and stay outside your village for work or studies?

1. Yes
 2. No
 3. Not sure/have not thought about it

Sample number (1/2)		Language in which the youth is tested in reading?					(✓ the highest level ONLY)					(✓ the highest level ONLY)					(✓ the highest level ONLY)					Meaning (Ask for the highest level ONLY and ✓)	
		HINDI																					
01	Clock-1																				Can say	Cannot say	
02	Clock-2																						
03	No. of hours																						
04	Total weight																						
05	Total money																						

10c. Other questions (For all youth)

Write code: 0 = No Response, 1 = Incorrect, 2 = Correct

Q6	Chlorine tablets																					
Q7	Length - key																					
Q8	Length - pencil																					
Q9																						
Q10																						
Q11																						
Q12																						
Q13	Identify map																					
Q14	Country's capital																					
Q15	State name																					
Q16	State on map																					
Q17	Neighbouring state name																					
Q18	Neighbouring state on map																					

10d. Financial literacy questions

Write code: 0 = No Response, 1 = Incorrect, 2 = Correct, X = Not asked

Q19	Rs. 50 budget																					
Q20	T-shirt - sale																					
Q21a	Bookshop																					
Q21b	Bookshop																					
Q22a	Bank																					
Q22b	Bank																					

(Only for youth who are at subtraction or division level)

Ability

The main architecture of the 'Beyond Basics' assessment tool is based on matching curricular expectations and ground realities that need to be taken into consideration if assessment data is to be translated easily to understand gaps and plan effective interventions.

Concepts tested

Because past editions of the ASER survey have highlighted the fact that significant proportions of older children lack foundational skills, ASER's basic assessment of reading, arithmetic and English was retained in the 'Beyond Basics' survey to understand whether all youth in the age group 14-18 have mastered these foundational abilities.

The National Council of Educational Research and Training's (NCERT) Learning Outcome indicators for elementary education also highlight several concepts that youth are expected to be familiar with at the end of each grade.¹ The 'Beyond Basics' assessment tool assesses some of these concepts in context of everyday usage. Some tasks on the 'Beyond Basics' tool are mapped to corresponding Learning Outcome indicators below:

Section and sample tasks	Corresponding subject and grade of learning outcomes
Daily tasks (telling time, counting money, adding weights)	Mathematics - Std III, IV
Common calculations (calculating time, applying unitary method, measuring length)	Mathematics - Std III, IV (time, length) Std VI (unitary method)
Map and General Knowledge	Social Science - Std VI
Financial calculations (percentage, simple interest)	Mathematics - Std VII, VIII

See pages 39-42 for actual tasks.

Development of the testing tool

Work on the ASER 2017 'Beyond Basics' tool began with a focus on what youth in the country should know and actually know; what they should be able to do and what they actually can do. Thus, in addition to the ASER reading and arithmetic tasks, a variety of other domains/dimensions in reading/comprehension, Mathematics and General Knowledge were explored.

Reading and comprehension

In exploring language capabilities of youth, tasks were designed that included both academic or textbook/curricular variety as well as functional or day to day types of tasks. Different methods were used such as reading and comprehension using an oral one-on-one method as well as a pen-paper format.² It was seen that administering a pen-paper test was not suitable in a household setting and did not engage the youth

¹ The entire list of learning outcomes is available in 'Learning Outcomes at Elementary Stage', accessible on the Ministry of Human Resource Development's website, at - http://mhrd.gov.in/sites/upload_files/mhrd/files/Learning_outcomes.pdf

² Reading comprehension: Several variants were developed and piloted. Text length was about 100 to 200 words. Narrative as well as informative texts were used; continuous as well as non-continuous text administered both orally one-on-one and in pen-paper format.

or the community. Hence, rather than academic texts, we focused on identifying documents that are commonly seen in households across the country and have similar objectives and content across states.

Background research was done in a variety of rural contexts on the kind/content of printed material available in public areas. Similar investigations were done for printed materials/documents/cards available in households. Three documents emerged as possible texts to use for an assessment of reading and comprehension: a Std X Board examination mark sheet, instructions on an oral rehydration package, and an immunization card for infants.

Each of these texts/tasks required reading, extracting information and applying what was extracted in a specific context. However, a lack of standardization in mark sheets and immunization cards across states limited the options of documents that could be used as the basis for an assessment to be administered across the country.

Mathematics

Reading and solving tasks using word problems or advanced competencies (such as percentages, fractions) were tried one-on-one as well as in a pen-paper format. These questions were also reframed to be visual, interactive and relatable to the youth's context. Most of these tasks did not require reading, such as tasks related to telling time, counting money, and measuring quantities. Since these tasks proved to be of interest to young people and their families, they were retained in the final assessment.

Questions on financial calculations were also added to this section. These questions were based on managing a budget, financial decision making, computing discounts and calculating rate of interest.

Language of assessment tool

The assessment tool has been translated to 13 languages. The following decisions were taken pertaining to the language of numerals and texts used in the tool.

- O.R.S. text: Through field-based fact finding it was found that O.R.S. packets in India are available in only 2 languages - Hindi and English - across all states in India. However, for purposes of the assessment text was created in all 13 languages used for the ASER survey.
- Numbers on tool: The numbers used throughout the assessment follow the international number system.
- Weights: The language used on the weights question in the assessment tool are Hindi and English, in accordance with the weights observed in different states.

Standardization of the testing process

The assessment was conducted in households and included all youth in the target age group of 14-18. To ensure standardization of the testing process across all survey locations, surveyors adhered to the following rules for testing:

- Surveyors had to read out the instructions as written on a standardized Test Administration Sheet. No variation in oral stimulus was permitted.
- Youth were provided with rough sheets for any calculations.
- Youth had the option to answer orally or in written form.

Assessment tool

The 'Beyond Basics' assessment tool tested the functional competencies of youth by assessing them on the following broad domains:

1. Basic ASER assessment of reading, arithmetic and English
2. Daily tasks like counting money, adding weights
3. Common calculations like measuring length, calculating time
4. Reading and understanding written instructions
5. Map and General Knowledge
6. Financial calculations (administered only to youth who were at subtraction or division level on the ASER arithmetic assessment)

1. Basic ASER assessment*

ASER reading tool

अनुच्छेद

आज मामा आए हैं।
मिठाई साथ लाए हैं।
हम सब मिठाई खाएंगे।
फिर मामा से कहानी सुनेंगे।

कहानी

विमला और अजय मेला देखने गए। उन्हें मेले में तरह-तरह की दुकानें दिखी। मेले में बहुत झूले थे। वहाँ गरम-गरम हलवा और जलेबियाँ भी बिक रही थी। जलेबी देखकर दोनों के मुँह में पानी आने लगा। उन्हें जलेबी खाने का मन करने लगा। विमला ने जलेबी खरीदी। दोनों ने मिलकर जलेबी खाई। शाम को दोनों घर लौट आए।

शब्द

नाक तोता कूड़ा
धुन मैना
देर रोटी पीला
पुल दिन

अनुच्छेद

रात हो गई है।
चाँद दिख रहा है।
तारे भी चमक रहे हैं।
सब लोग सो गए हैं।

अक्षर

द क च
ब ल
थ ह त
म ख

ASER arithmetic tool

Subtraction	Division	Number recognition 10-99	Number recognition 1-9
$\begin{array}{r} 36 \\ - 18 \\ \hline \end{array}$	$\begin{array}{r} 4 \overline{)591} \end{array}$	28 81	1 4
$\begin{array}{r} 82 \\ - 24 \\ \hline \end{array}$	$\begin{array}{r} 7 \overline{)872} \end{array}$	92 13	7 3
$\begin{array}{r} 73 \\ - 54 \\ \hline \end{array}$	$\begin{array}{r} 6 \overline{)759} \end{array}$	49 63	6 9
$\begin{array}{r} 98 \\ - 79 \\ \hline \end{array}$	$\begin{array}{r} 8 \overline{)986} \end{array}$	78 34	5 2
$\begin{array}{r} 74 \\ - 59 \\ \hline \end{array}$		17 56	5 2
$\begin{array}{r} 57 \\ - 18 \\ \hline \end{array}$			

ASER English tool

Capital letter

A J Q
N E
Y R O

Word

cat sun red
new fan
bus

Small letter

h p x
u m
d g t

Sentence

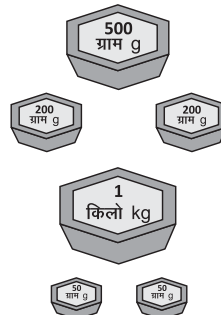
What is the time?
This is a large house.
I like to read.
She has many books.

*Administration instructions for the basic ASER assessment remains unchanged from previous ASER editions. To see these instructions see page 43-46.

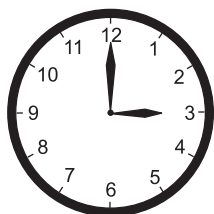
2. Daily tasks



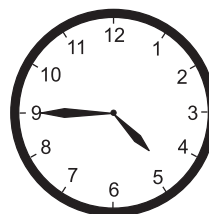
Add and tell me what is the total amount of money shown in this picture.



What is the total weight shown in this picture? Add and give the answer in kilograms.

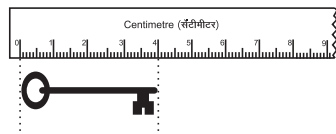


What is the time shown in this clock?

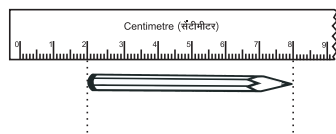


What is the time shown in this clock?

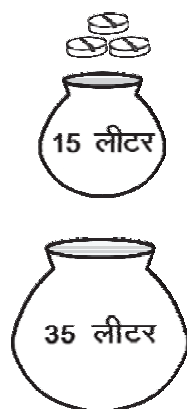
3. Common calculations



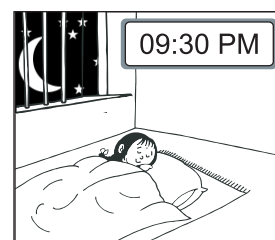
Using the scale shown, measure the length of the key. Give the answer in centimetres.



Using the scale shown, measure the length of the pencil. Give the answer in centimetres.



If 3 chlorine tablets are needed to purify 15 litres of water, how many chlorine tablets are needed to purify 35 litres of water?



If this girl sleeps at this time at night and wakes up at this time in the morning then for how many hours does she sleep?

For each task, the surveyor shows the visual and reads out the question. The youth's responses are coded as correct or incorrect. If the youth does not respond or says that he/she does not know the answer then that is also coded.

4. Reading and understanding written instructions

ओ.आर.एस.
(जीवन रक्षक घोल)

ओ.आर.एस. घोल तैयार करने की विधि



साफ बर्तन में 1 लीटर पानी उबालें और उसे ठंडा कर लें।



ठंडे पानी में 1 पैकेट पूरा ओ.आर.एस. डाल दें।



इसे अच्छी तरह मिला लें।



यह घोल बच्चों को पिलाएँ।

ओ.आर.एस. के घोल की मात्रा उम्र और दस्त की गंभीरता को देखते हुए दें।
 बच्चे : 1 से 2 लीटर घोल को 24 घंटे के अन्दर पिलाएँ।
 युवा : 2 से 4 लीटर घोल को 24 घंटे के अन्दर पिलाएँ।
 इस इलाज को दस्त ठीक होने तक जारी रखें।

सचेत:

- बना हुआ घोल ढककर रखें एवं 24 घंटे के अन्दर ही इस्तेमाल करें।
- बचा हुआ घोल फेंक दें।

इस पैकेट को सूखी जगह में ही रखें।
 मूल्य : 19 रुपये
 उत्पादन की तारीख : मार्च 2015
 समाप्ति की तारीख : मार्च 2018

- How many packets of O.R.S. should be added to 2 litres of water?
- Within how many hours should the prepared solution of O.R.S. be consumed?
- How many litres of O.R.S. can be given to a 21-year old within a span of 24 hours?
- Based on the information given, can this packet of O.R.S. be consumed in December 2018?

5. Map and General Knowledge



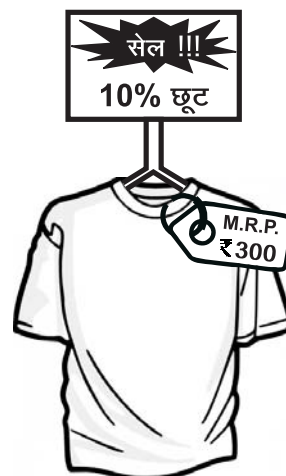
- The map shown here is of which country?
- What is the name of our country's capital?
- Which state do you live in currently? Name that state.
- On the map, point and show the state that you live in currently.

For each task, the surveyor shows the visual and reads out the question. The youth's responses are coded as correct or incorrect. If the youth does not respond or says that he/she does not know the answer then that is also coded.

6. Financial calculations*

मूल्य सूची	
कोल्ड ड्रिंक.....	₹ 25
चाय.....	₹ 12
नमकीन.....	₹ 22
बिस्कुट.....	₹ 27
चॉकलेट.....	₹ 16

You visit a shop where this rate list has been displayed. If you have to spend Rs. 50 completely and buy 3 different things, which 3 things can you buy?



This is the price of this t-shirt and it is available on a discount of 10 percent. If you were to buy this t-shirt, how much money would you need to spend?

दुकान 1		दुकान 2	
मूल्य सूची		मूल्य सूची	
किताब का नाम	मूल्य	किताब का नाम	मूल्य
विज्ञान	₹ 50	विज्ञान	₹ 50
गणित	₹ 80	गणित	₹ 80
हिन्दी	₹ 30	हिन्दी	₹ 30
अंग्रेज़ी	₹ 70	अंग्रेज़ी	₹ 70
इतिहास	₹ 40	इतिहास	₹ 40

₹ 299
 केवल इन 5 किताबों का सेट

Suppose that you go to a market to buy books. There are two bookshops in the market, each selling the same 5 books. Compare the rate lists of the 2 shops and tell me which shop will you buy the books from, if you have to buy all the 5 books?

What is the least amount of money you will have to spend in order to buy the 5 books?

Raju's father has to buy a plot of land. For this he has to take a loan from a bank. The rates of interest offered by 3 different banks has been listed below.

बैंकों के ब्याज दर	
बैंक का नाम	लोन (ऋण) पर ब्याज दर
लक्ष्मी बैंक	11% प्रतिवर्ष
लेना बैंक	12% प्रतिवर्ष
राशि बैंक	13% प्रतिवर्ष

लोन की रकम = 20,000 रुपये

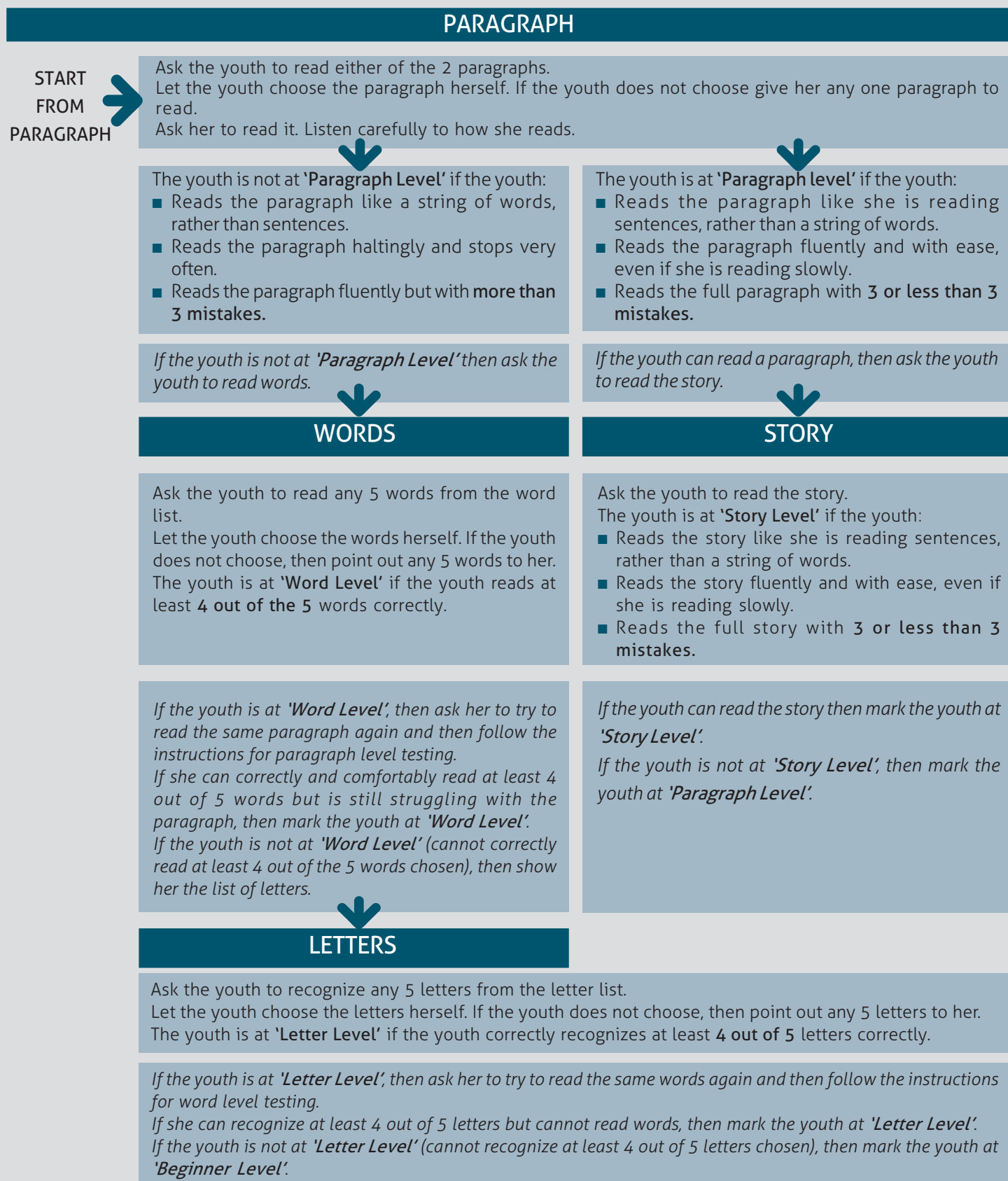
Taking a loan from which of these banks would be most profitable for Raju's father?

Raju's father took a loan of Rs. 20,000. After 1 year, what is the total amount, including the interest, that he would have to return to the bank?

For each task, the surveyor shows the visual and reads out the question. The youth's responses are coded as correct or incorrect. If the youth does not respond or says that he/she does not know the answer then that is also coded.

*These tasks were administered only to youth who were at subtraction or division level on the ASER arithmetic assessment.


How to test ASER reading



Refer to page 39 for the testing tool.

How to test ASER arithmetic

SUBTRACTION 2 digit with borrowing

START FROM SUBTRACTION 

The youth is required to solve 2 subtraction problems. Show the youth the subtraction problems. First ask the youth to choose a problem, if not, then you pick one.
Ask the youth what the numbers are, then ask the youth to identify the subtraction sign.
 If the youth is able to identify the numbers and the sign, ask her to write and solve the problem in the rough sheet provided in the Village Booklet. Observe if the answer is correct.
Even if the first subtraction problem is answered incorrectly, ask the youth to solve the second question following the process explained above. If the second problem is correct, ask the youth to try and do the first problem again.
 If the youth makes a careless mistake, then give the youth another chance with the same question.

*If the youth **cannot do both** subtraction problems correctly, then ask the youth to recognize numbers from 10-99.*
 Even if the youth does just one subtraction problem wrong, give her the number recognition (10-99) task.

*If the youth **does both** the subtraction problems correctly, ask her to do a division problem.*

NUMBER RECOGNITION (10-99)

Ask the youth to identify any 5 numbers from the list. Let the youth choose the numbers herself. If the youth does not choose, then point out any 5 numbers to her.
 If she can correctly recognize at least **4 out of 5** numbers, then mark her at '**Number Recognition (10-99) Level**'.

DIVISION: 3 digits by 1 digits

The youth is required to solve 1 division problem. Show the youth the division problems. She can choose any one problem. If not, then you pick one. Ask her to write and solve the problem. Observe what she does. If she is able to correctly solve the problem, then mark the youth at '**Division Level**'.
Note: The quotient and the remainder both have to be correct.
 If the youth makes a careless mistake, then give the youth another chance with the same question.

*If the youth is not at '**Number Recognition (10-99) Level**' (cannot correctly recognize at least 4 out of 5 numbers chosen), then ask her to recognize numbers from 1-9.*

*If the youth is unable to solve a division problem correctly, mark the youth at '**Subtraction Level**'.*

NUMBER RECOGNITION (1-9)

Ask the youth to identify any 5 numbers from the list. Let the youth choose the numbers herself. If the youth does not choose, then point out any 5 numbers to her.
 If she can correctly recognize at least **4 out of 5** numbers, then mark her at '**Number Recognition (1-9) Level**' .
 If the youth is not at '**Number Recognition (1-9) Level**' (cannot recognize at least 4 out of 5 numbers chosen), then mark her at '**Beginner Level**'.

Refer to page 39 for the testing tool.

How to test ASER English

There are 2 parts in the English testing: Reading and Meaning.

- First administer the reading section and mark the highest reading level of the youth.
- Then administer the meaning section. **This is only for youth who are marked at word or sentence level in the English reading section.**

PART 1: READING

CAPITAL LETTERS

START FROM CAPITAL LETTERS



Ask the youth to recognize any 5 capital letters from the capital letter list. Let the youth choose the letters herself. If the youth does not choose, then point out any 5 letters to her.



The youth is not at 'Capital Letter Level' if the youth cannot recognize at least 4 out of the 5 letters.

The youth is at 'Capital Letter Level' if the youth correctly recognizes at least 4 out of the 5 letters.



If the youth is not at 'Capital Letter Level' (cannot recognize at least 4 out of the 5 letters chosen), then mark the youth at 'Beginner Level'.

If the youth is at 'Capital Letter Level', then ask the youth to recognize small letters.



SMALL LETTERS

Ask the youth to recognize any 5 small letters from the small letter list. Let the youth choose the letters herself. If the youth does not choose, then point out any 5 letters to her.



The youth is not at 'Small Letter Level' if the youth cannot recognize at least 4 out of the 5 letters.

The youth is at 'Small Letter Level' if the youth correctly recognizes at least 4 out of the 5 letters.

If the youth is not at 'Small Letter Level' (cannot recognize at least 4 out of 5 letters chosen), then mark the youth at 'Capital Letter Level'.

If the youth is at 'Small Letter Level', then ask the youth to read the words.



WORDS

Ask the youth to read any 5 words from the word list. Let the youth choose the words herself. If the youth does not choose, then point out any 5 words to her.



The youth is not at 'Word Level' if the youth cannot read at least 4 out of the 5 words.

The youth is at 'Word Level' if the youth correctly reads at least 4 out of the 5 words.

If the youth is not at 'Word Level' (cannot read at least 4 out of the 5 words chosen), then mark the youth at 'Small Letter Level'.

If the youth is at 'Word Level', then ask the youth to read the sentences.

Continued on the next page.

SENTENCES

Ask the youth to read all four of the given sentences.

The youth is not at '**Sentence Level**' if the youth:

- Cannot read at least **2 out of the 4** sentences fluently.
- Reads the sentences like a string of words, rather than a sentence.
- Reads the sentences haltingly or stops very often.

*If the youth is not at '**Sentence Level**', then mark the youth at '**Word Level**'*

AND

Ask the youth to tell you the meaning of the words she has read correctly.

The youth is at '**Sentence Level**' if the youth:

- Reads at least **2 out of the 4** sentences fluently.
- Reads the sentence like a sentence and not a string of words.
- Reads the sentence fluently and with ease, even if she is reading slowly.

*If the youth is at '**Sentence Level**', then mark the youth at '**Sentence Level**'*

AND

Ask the youth to tell you the meaning of the sentences she has read correctly.

PART 2: MEANING

FOR 'WORD LEVEL' YOUTH

WORD MEANINGS

Ask the youth to tell the meaning of the words she has read correctly, **in her local language**.

The youth knows the meaning of the words, if the youth can correctly tell the meaning of at least 4 of the read words. She can tell the meaning of the words by:

- Saying the correct meaning in her local language OR
- Pointing to an object, which explains the meaning of the word. For eg. pointing to her father while explaining the meaning of 'man'; pointing to something red to explain the meaning of 'red'.

*If the youth can correctly tell the meaning of **at least 4** of the words, then mark the youth as '**Can say**' in the meaning column.*

*If the youth cannot correctly tell the meaning of **at least 4** of the words, then mark the youth as '**Cannot say**' in the meaning column.*

Note: If the youth is marked at word level, then ask only word meaning.
 If the youth is marked at sentence level, then ask only sentence meaning.

FOR 'SENTENCE LEVEL' YOUTH

SENTENCE MEANINGS

Ask the youth to tell you the meaning of the sentences she has read correctly, **in her local language**.

The youth knows the meaning of the sentences, if the youth can correctly tell the meaning of at least 2 of the read sentences. She can tell the meaning of the sentences by:

- Saying the correct meaning in her local language OR
- Explaining the meaning of at least the main underlined words in the sentence. For eg. For a sentence like 'What is the time?' the youth should at least be able to say '*kya/kitna*' and '*samay/waqt*'.

Note: Do not ask the meaning of the main underlined words by pointing at them one by one

*If the youth can correctly tell the meaning of **at least 2** of the sentences, then mark the youth as '**Can say**' under the meaning column.*

*If the youth cannot tell the meaning of **at least 2** of the sentences, then mark the youth as '**Cannot say**' under the meaning column.*

Quality control in ASER 2017

Quality control processes for ASER 2017 can be broadly divided into training-based processes, field-based processes and data entry processes.

Training-based processes

Standardization in training and survey is extremely important in order to ensure that the data collected is reliable and valid across districts and states. For this purpose, ASER Centre ensures that the guidelines and instructions for the trainings delivered are kept clear and consistent so that each participant is able to conduct the survey accurately.

ASER 2017 survey trainings followed a rigorous two-tier model that consists of:

- *National training:* ASER state team members are trained by the ASER central team. Each year, the ASER survey begins with a 6-day national training. The main objective of the national training is to thoroughly train teams on all survey tools and processes. The training was held in Jaipur, Rajasthan from 20th to 25th September, 2017. It comprised 3 days of classroom sessions and 3 days of field visits to nearby villages.
- *District level training:* State and central team members trained surveyors at district level trainings. All trainers were graduates or above, with an average experience of 5 years of field work. On average, three ASER team members trained a batch of 60 volunteers for 4 days. Like the national level training, key elements of district trainings included classroom sessions, field practice sessions and a quiz.

State team members were present in survey districts throughout the process, from training to final data recheck. The process lasted for about one month in each district.

Quality control processes during training were designed to help assess the quality of surveyors and to make decisions about surveyor pairing and village allocation. Surveyors were evaluated on the following criteria:

- *Attendance:* All surveyors were required to attend all days of training. This was factored in during village allotment and surveyor pairing.
- *Quiz results:* During the training, surveyors took two quizzes, one to test their ability to answer the assessment questions correctly and the other to check their understanding of the ASER survey process.
- *Format filling exercise:* During the training, surveyors were given mock cases which they used to practice filling in survey formats.
- *Field visit performance:* One day of the training is devoted to practicing the actual survey. The field visit day is extremely useful for the participants to get hands-on experience of doing the survey. Surveyors were evaluated on their performance during the practice field visit.

Performance on all of these indicators was analysed to categorize the surveyors as Good, Average and Poor. The final selected surveyors had full attendance and on average scored at least 60% on both quizzes.

Field processes

These comprise 'monitoring', 'recheck', and 'resurvey' activities. Each year these processes are reviewed and strengthened in order to improve the quality of the data collected.

Monitoring

During the survey, ASER teams supervised surveyors to ensure the quality of data collected. The ASER 2017 monitoring process consisted of two kinds of activities:

- *Field monitoring:* To ensure that the survey process was followed, ASER teams accompanied surveyors to villages, in order to clarify doubts and correct any mistakes on the spot. Field monitoring was done in villages that were hard to reach or where it was anticipated that surveyors may need additional support based on their performance during training. On average, ASER teams monitored 28 villages (47%) out of the 60 surveyed in each district.
- *End of day calls:* At the end of each survey day, ASER team members made phone calls to surveyors to ask about the survey's progress in their village. This helped in identifying villages that required immediate corrective action or additional support.

Recheck

Once the survey is over in a village, the data collected is verified at various levels. The following recheck activities were conducted in ASER 2017:

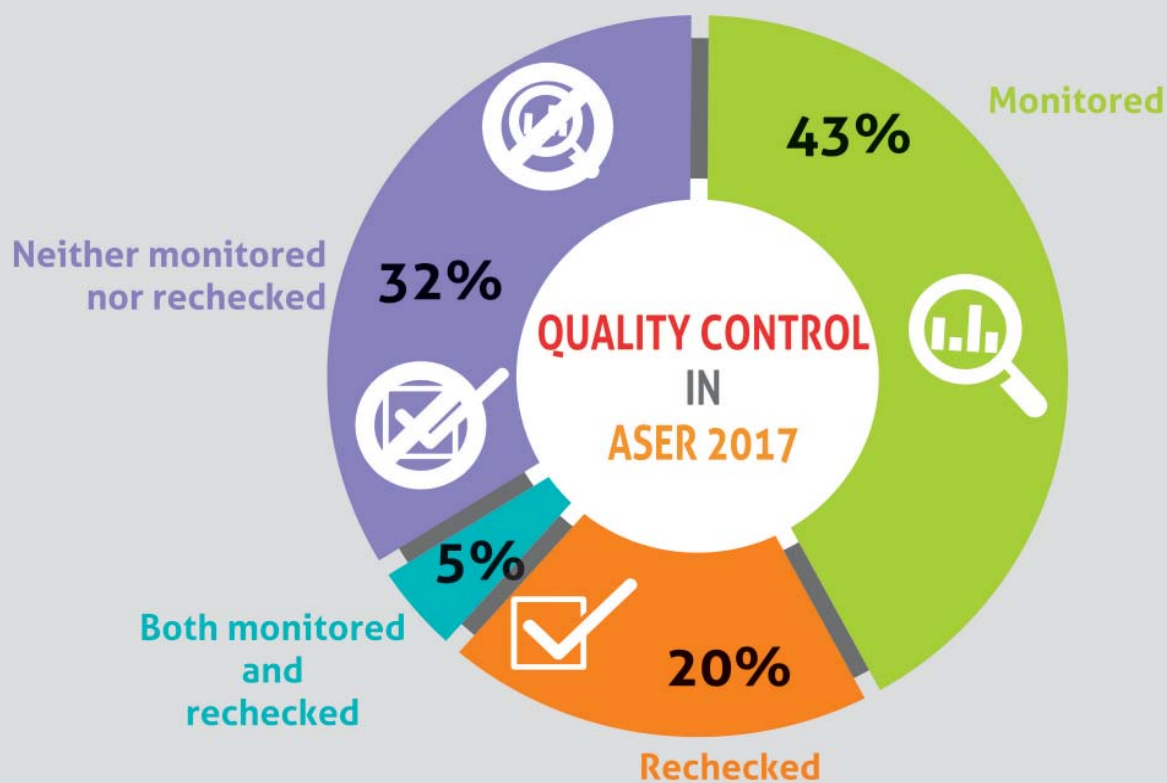
- *Desk and phone recheck:* On the completion of the survey in a district, the ASER state team conducted desk rechecks of the survey booklets received for all surveyed villages. In addition, at least 4 out of 16 households surveyed in each village were contacted by telephone. These procedures enabled quick identification of villages which were not surveyed correctly.
- *Field recheck by ASER state team:* Based on the information collected from the desk and phone rechecks, villages were identified for field recheck. In each such village, 50% of all surveyed households were rechecked. This process involved verification of the key parameters of the survey - sampling, selection of children and testing. While it was verified that testing was conducted, the youth was not tested again during recheck.
- *Cross-state field rechecks:* As the last stage to strengthen the quality control process, ASER state team members switched states and conducted a cross-state recheck. Some districts were chosen purposively and others were selected randomly. The recheck process remained the same.

On average, ASER teams rechecked 15 villages out of the 60 surveyed in each district (25%).

Resurvey

If during the monitoring and recheck processes, the quality of the survey data is found to be unacceptable, then the village is resurveyed. In ASER 2017, 52 villages were resurveyed.

Overall, a total of 1,110 (approximately 68%) villages out of the 1,641 villages surveyed in ASER 2017 were either field monitored, field rechecked or both by ASER teams.



District Management System (DMS)

The processes described above are a fundamental part of ensuring data quality. In order to consolidate the results of all processes in one place and enable rapid decision making, we introduced the 'District Management System' (DMS), a new quality control system for ASER 2017. The DMS enabled ASER state teams to document quality control details at each stage of the survey. Its dashboard tab provided a summary of the survey in each district, including all relevant information about the progress and quality of the survey, so that ASER teams could take decisions efficiently.

Data entry

Data for the survey was recorded in hard copy survey booklets. To compile and then process this data for analysis, it was entered into a database (MS Access or MySQL). For each question in the survey, rules and validations were in place to control incorrect entries.

Data was entered in selected data entry centres across the country. For ASER 2017, there were 7 data entry centres across the country. Once the data entry centres were selected, their staff was trained on how to enter ASER data.

After entry was completed every 5th entry was cross-checked with hard copies to ensure that correct data had been entered. If more than 2 mistakes were found, data for the entire village was cross-checked. A final cross-check was done centrally between child-wise data and a compilation sheet with compiled data. If there was more than a 2% difference between the 2 data sets, then the entire district's data was cross-checked.

ASER 2017, also referred to as 'Beyond Basics', is a pilot assessment of 14-18 year olds in the ASER architecture. In other words, it is a rapid assessment of youth, done in households, by ordinary citizens. Each of these elements creates its own challenges for the design of the assessment. The assessment was done simultaneously across the country during October-December 2017.

Like ASER, the 'Beyond Basics' survey also has a two-stage sample design. In the first stage, in each surveyed district, villages are randomly selected from the Census 2011 village directory. In the second stage, households are randomly selected in each of the villages selected in the first stage. This sampling strategy generates a representative picture of each district. 1 rural district has been surveyed in each major state, with the exception of Punjab, Uttar Pradesh, Madhya Pradesh and Maharashtra where 2 rural districts have been surveyed. While this is not a nationally representative sample, the size and geographical spread of the sample enables the estimates to be aggregated to get an overall picture of the rural population in India.

The ASER 2017 sample consists of 28 districts spread across 24 states.² While the districts were not sampled randomly, care was taken not to choose districts that were anomalous in terms of their learning outcomes as measured in ASER 2016. First, since the main focus of the survey is on the learning levels of youth, districts where average learning levels were more than 15 percentage points higher or lower than the state average were not considered.³ Second, in each state, partner organizations were approached in districts that had learning levels close to the state average. Eventually, the final districts to survey were chosen for logistical convenience based on partner availability and ability to provide volunteers during the survey period.

In each surveyed district, 60 villages⁴ are sampled from the Census 2011 frame using the probability proportional to size (PPS) sampling method, in the first stage. This method allows villages with larger populations to have a higher chance of being selected in the sample. It is most useful when the first stage sampling units vary considerably in size, because it ensures that households in larger villages have the same probability of getting selected into the sample as those in smaller villages, and vice versa.⁵ In the second stage, households/youth in the age group of 14-18 years are surveyed in each sampled village.

There are various issues that complicate the second stage sampling. First is the issue of sparse populations. ASER survey as well as our research studies on older children have shown that simply sampling households in the village may not result in sufficient sample sizes of youth in the age group of 14-18 years. For instance, in ASER 2016, where 20 households are randomly selected in a village, only about 5.3 households had children in the age group of 14-16. The best solution to this problem of sparse populations of interest is to create a listing of the target population (for a particular cluster) and sample from that, thus, employing a stratified sample. However, given the rapid assessment nature of ASER and several resource constraints (time, people, money), ASER does not stratify at the second stage - there is no houselisting done at the village level.

¹ Director, ASER Centre

² States and Union Territories not represented in the sample are Arunachal Pradesh, Goa, Mizoram, Sikkim, Tripura, Chandigarh, Delhi, Daman and Diu, Dadra and Nagar Haveli, Lakshadweep, Puducherry, and Andaman and Nicobar Islands.

³ Estimates from ASER 2016 were used to compare district learning levels of 14-16 year olds with the state average.

⁴ We decided to double the number of villages per district as compared to ASER, so as to get a larger district sample since the Beyond Basics survey is being done in only 1 district per state.

⁵ Most large household surveys in India, like the National Sample Survey and the National Family Health Survey also use this two stage design and use PPS to select villages in the first stage.

Second, the absence of a houselisting creates additional problems in surveys that are representative at multiple levels of aggregation. In these surveys estimates have to be weighted with appropriate weights⁶ to account for different underlying population sizes - a more populous state like Uttar Pradesh will have a higher weight in the national estimate than a state like Himachal Pradesh. The calculation of these weights requires the underlying population proportion of the target group of interest. So if the household were the unit of sampling then we would need the number of households in the village to calculate the weights. On the other hand, if youth in the age group of 14-18 years were our target population, we would need the total number of such youth in the village to calculate the weights. A houselisting of the village would provide not only the frame for sampling these youth, but also the total number of such youth in the village.

ASER resolves both these problems by sampling households. Household weights are easy to calculate since the Census provides the village population of households. Therefore, the sample in ASER is defined in terms of households and not children. In the normal ASER, all children in the age group of 3-16 years living in the sampled households are surveyed. So as to get a representative sample of the household distribution, even households with no children in the target age group are counted as part of the sample. The number of households and villages in ASER has remained more or less unchanged since 2006, though the number of children surveyed has fallen by about 25% between 2006 and 2014.⁷ However, given the scale of ASER and large household sizes in rural India, this strategy yields large enough samples to do age wise or Std wise analysis at the state level.

Given that we wanted to retain as much of the rapid assessment ASER architecture⁸ as possible in the 'Beyond Basics' ASER, houselisting at the village level was not an option. Following the ASER sampling strategy would have given us a representative distribution of households but may not have generated a large enough sample size for the target population. ASER 2016 data suggested that we would get about 6 children in the 14-16 year age group by sampling 20 households per village. This is a sample size problem and can be overcome in a number of ways - e.g., by sampling more villages per district and/or more households per village.⁹ However, both strategies have consequences: increasing the number of villages has cost implications and increasing the household sample in a village doesn't necessarily result in higher precision if the intra-cluster correlation is high. In any case, going by the ASER numbers to get a reasonable sample size (about 1,000 youth per district) would require sampling close to 100 villages in each district and about 40 households in each village.

Another strategy could be to sample only households with members of the target population as is done in the National Family Health Survey. However, as discussed earlier, this would require creating a frame of the target population in the village, which would be used to both sample and calculate weights.

Finally, we adopted a sampling strategy that modified the ASER approach, so as to get sufficient sample sizes and be able to calculate weights without creating a houselisting in the village. The standard ASER

⁶ The weight associated with each sampling unit, household in ASER, is the inverse of the probability of it being selected in the sample.

⁷ The drop in number of sampled children is probably due to the increase in the number of rural households since 2006. Census 2011 notes that there was a 24% increase in rural households since Census 2001. Yet, the rural population increased by only 12% during the same period, implying that the average rural household size has gone down resulting in fewer children per household.

⁸ Household based assessment of children; activity based assessment with easy to understand tools; community (volunteer) involvement in the actual survey; quick availability of the estimates; and rigorous methodology yielding reliable estimates at the state level.

⁹ For example, in most of our research studies we sample 60 villages per district.

sampling approach in the village is to mimic simple random sampling without doing a houselisting. Volunteers walk around the village, make a map, divide the village into four parts, and sample 5 households using the fifth household rule, in each part, to get 20 households in the village. Households with no children in the target age group count as part of the sample since the aim is to get a representative picture of the household distribution.

In the ASER 2017 'Beyond Basics' survey we modified this approach so as to capture sufficient numbers of 14-18 year old youth. The process is described below:

1. Walk around the village and make a map and divide the village into four parts.
2. In each part go to a central location and use the fifth household rule starting from the left to sample households.
3. If the household has children in the 14-18 year age group currently residing the household, record the household number, and the number of such youth. Administer the survey to all children in the target age group in the household and collect information on the household. Proceed to the next 5th household.
4. If the household has children in the 14-18 year age group, but not currently residing the household, record the household number and the number of such youth, and proceed to the next 5th household.
5. If the household has no children in the 14-18 year age group, record the household number and the fact that it has no children in the target age group and move to the next adjacent household. Note that unlike ASER, we do not record household characteristics in households with "no children".¹⁰
6. If the household is locked or does not want to participate in the survey record the household number and the fact that it was locked or a non-response household and move to the next adjacent household.
7. Continue this procedure until you have administered the survey in 4 households in each of the four sections of the village.

At the end of the survey in the village, this procedure will yield 16 households with completed survey information, as well as the total number of households visited to achieve this. This latter is needed for the calculation of correct weights.¹¹

¹⁰ This was done to save time since the survey is much longer as compared to the usual ASER.

¹¹ The probability that household j gets selected in village i (p_{ij}) is the product of the probability that village i gets selected (p_i) and the probability that household j gets selected (p_{j(i)}). This is given by:

$$P_{ij} = p_i P_{j(i)} = \frac{n_v vpop_i}{dpop} \frac{n_{hi}}{vpop_i} = \frac{n_v n_{hi}}{dpop}$$
 where n_v is the number of villages sampled in the district, $vpop_i$ is the household population of village i, $dpop$ is the number of households in the district, and n_{hi} is the number of households visited in the village (to get the 16 sampled households). The weight associated with each sampled household within a district is the inverse of the probability of selection. Note that the sum of the weights of the households will give the district population and the sum of the weights for all youth in the sample will approximate to the population of youth in the 14-18 year age group in the district.

To summarize, ASER 2017 'Beyond Basics' employs a two-stage clustered design. In the first stage 60 villages are sampled from the Census 2011 village directory using PPS. In the second stage, 16 households with resident youth in the age group of 14-18 years are surveyed in each sampled village. This gives a sample of at least 960 youth in each district.^{12, 13}

The report presents district report cards for each of the 28 surveyed districts. While the sample size of about 1,000 youth in each district is sufficient to present estimates for the target population as a whole or disaggregating by two sub-populations like gender or enrollment status, it is not sufficient for reliable estimates of smaller sub-populations. However, with a sample size of about 1,000 youth per district the full sample is close to 30,000 youth. Therefore, we also present findings (appropriately weighted) based on the entire sample. These estimates are based on 26 of the 28 districts. Two districts - Amritsar in Punjab and Satara in Maharashtra - have not been included in the aggregated results. Since ASER 2017 is a pilot assessment of 'Beyond Basics' competencies for older youth, its geographical coverage is limited. However, as stated earlier, since these districts are spread across the country in every major state, the full sample does give a snapshot of the national picture. So as to get a more balanced sample two districts were surveyed by design in Uttar Pradesh and Madhya Pradesh, the two states with the largest number of districts in India. Due to high levels of interest from partner organizations we also surveyed an additional district each in Maharashtra and Punjab, but data from these additional districts is not included in the aggregated estimates.

¹² All youth in the target age group are surveyed in the sampled households. Therefore, the sample size in terms of youth is at least 960 per district.

¹³ For a two-stage sample design, sample size calculations have to take into account the design effect, which is the increase in variance of estimates due to departure from simple random sampling. This design effect is a function of the intra-cluster correlation. The greater this correlation, the larger is the design effect implying a larger sample size for a given level of precision. For a given margin of error (me),

the sample size can be backed out from $me = \frac{2\sigma}{p} = \frac{2\sqrt{d p(1-p)}}{N-1}$ where d is the design effect, p is the incidence in the population, σ its

standard error and N the sample size. Since learning levels are unknown for the competencies being tested in Beyond Basics, one has to start with some assumption about p. The largest uncertainty is around p = 0.5, and therefore that yields the largest sample size. Assuming no design effect, a margin of error of 10% and incidence of 0.5, gives a sample size of 400. A design effect of 2 would double that sample size. Therefore, a sample size of about 1000 in each district should give reasonable levels of precision. Of course, the combined estimates with a sample size of almost 30,000 would be far more reliable.

