Frequently Asked Questions

ICAN
International Common Assessment of Numeracy
Frequently asked questions about ICAN

Overview.................................................................3
1. What is ICAN? 3
2. What does the ICAN assessment tool measure? 3
3. Why was ICAN designed and implemented? Isn’t information on children’s learning outcomes already available? 3
4. What are the main similarities and differences between ICAN 2019 and other international and regional assessments? 4
5. How is the ICAN assessment tool different from the existing citizen-led assessment (CLA) tools? 4
7. Why did ICAN 2019 assess children at home and not in school? 5
8. Why does ICAN assess children orally using a one-on-one format? 5
9. What was the geographical coverage of ICAN 2019? How were districts selected for ICAN 2019? 5
10. What was the sampling strategy for ICAN 2019? How were rural communities and households sampled? 6
11. What was the sample size for ICAN 2019? Are ICAN 2019 results representative at the country level? 6
12. Did ICAN 2019 assess children with disabilities/special needs or children not living in the sampled households? 6

Assessment tools and questionnaires ........................................................................7
13. How is the ICAN assessment tool aligned to national curriculum frameworks of the participating countries? 7
14. In what languages was ICAN administered? Is there a plan to include more languages? 7
15. How were the language versions of the ICAN assessment tool created? 7
16. Were all children assessed using the same assessment tool in ICAN 2019? What happens when a child can do tasks of higher difficulty than currently assessed in the ICAN assessment tool? 7
17. What contextual information was collected in ICAN 2019? To whom were the contextual questionnaires administered? 8
Implementation ........................................................................................................... 9

18. When was the ICAN 2019 assessment implemented? 9
19. Who managed the ICAN 2019 assessment in selected districts? Who collected the data from sampled households? 9
20. What training was provided to the field enumerators to conduct the ICAN 2019 assessment? 9
21. What quality control procedures were implemented in ICAN 2019 to ensure the data quality? 9
22. How much did it cost to survey one rural community in ICAN 2019? Who funded ICAN? Can PAL Network fund implementation of ICAN in other countries? 10
23. Was ICAN administered to children remotely? How can the ICAN assessment be implemented during and after the pandemic situation? 10
24. During the current school closures, can ICAN assessment be administered over the phone? 10

Results and impact ...................................................................................................... 11

25. What are the key findings from ICAN 2019? What recommendations do you have for policy makers and stakeholders, especially in Global South? 11
26. How can ICAN assessment be integrated into the government’s own system of monitoring learning outcomes? 11
27. How can ICAN findings influence education policy making and implementation? 11
28. How can ICAN be used to support classroom practices, especially post the current pandemic situation? 13
Overview

1. What is ICAN?
ICAN stands for the International Common Assessment of Numeracy. Designed and implemented by the People’s Action for Learning (PAL) Network, ICAN is a simple-to-use tool that measures foundational numeracy and is aligned to the Sustainable Development Goal (SDG) 4.1.1(a). In late 2019 and early 2020, PAL Network members conducted a large-scale household-based assessment using the ICAN assessment tool in 13 low- and middle-income countries across Africa, Asia, and the Americas.¹

2. What does the ICAN assessment tool measure?
ICAN assesses foundational numeracy. Foundational numeracy typically comprises domains such as number knowledge, measurement, geometry, and simple data display. The minimum proficiency level descriptor for numeracy under SDG 4.1.1(a) for classes 2 and 3 also requires students to demonstrate skills in number sense and computation, shape recognition, and spatial orientation. Aligned to these definitions, the ICAN assessment tool includes tasks on number knowledge (counting, number recognition, number operations, and worded problems), geometry (position and direction, shapes and figures), measurement (length and volume, telling time and telling date from a calendar) and data display (retrieving simple information).²

3. Why was ICAN designed and implemented? Isn’t information on children’s learning outcomes already available?
The development of common global goals for education as reflected in SDG 4, and the need for comparable data to monitor education quality targets has meant that many low- and middle-income countries face increasing pressure to participate in existing international and regional assessment programs. These learning assessments are based on models and methods that emerged in the context of Global North countries, which have characteristics that are often very different from countries in the Global South. For example, countries in the Global North have several decades of universal enrolment, comprehensive records of all schools in a country and a significant proportion of parents who are literate and thus better able to support their children’s learning. In these education systems, assessments are integral part of the larger teaching-learning framework that guides the schools’ functioning, with data on students’ progress feeding into decisions and plans for improvements.

Existing international and regional assessments are designed to inform policy makers and education planners, rather than teachers, parents, and other actors on the ground and do not generate actionable information at lower levels of performance where a large proportion of children in the Global South are usually located. This type of evidence is urgently needed by school systems in the Global South. Specifically, measurement of foundational reading and numeracy skills in early primary grades is critical to identify problems and intervene to resolve

¹ For more information on ICAN, see https://palnetwork.org/ican/
² For more information on ICAN assessments tasks, see https://palnetwork.org/wp-content/uploads/2020/06/2020_ICAN-Tool_Brochure_EN.pdf
them early in children's schooling trajectory. ICAN responds to this need for a comparable, low-cost assessment of numeracy that meets the realities of the Global South.

4. **What are the main similarities and differences between ICAN 2019 and other international and regional assessments?**

Existing international and regional assessments are generally conducted at schools thus leaving out sizeable proportions of children who are not enrolled in school or are not in school on the day of assessment. These assessments are generally pegged to specific grade-level content and, in most cases, do not examine foundational skills. Further, these assessments usually use a group-based pen and paper format, which assumes that children are able to read the assessment questions. In contrast, ICAN 2019 was conducted in households and children were assessed orally, one on one so as to include all children irrespective of their ability to read. ICAN is aligned to the widespread agreement that foundational numeracy includes domains such as number knowledge, geometry, measurement, and simple data display. In the selection of domains, ICAN is similar to most other international and regional assessments of numeracy at the primary school level.

5. **How is the ICAN assessment tool different from the existing citizen-led assessment (CLA) tools?**

Following the core principles of CLAs, ICAN is:

- Conducted orally and one on one to include all children regardless of their reading ability
- Available as a public good
- Suitable for a broad age group of learners in order to identify gaps in foundational numeracy even for older children

Existing CLAs are aligned with national curriculum frameworks. A strong focus of the existing CLAs in numeracy is on number knowledge. ICAN was developed collaboratively by PAL Network members, drawing on the expertise and experience of each member. Tasks in ICAN are based on a broader understanding of mathematics and requirements for numeracy in the early primary grades. Additional domains of basic numeracy were included to increase the scope of the skills assessed with ICAN, encompassing number knowledge, measurement, geometry, and simple statistics in the form of data display. The increased scope of the skills assessed significantly enhances the explanatory power of ICAN to more validly report on children’s basic numeracy competencies. In addition, the skills assessed with ICAN are in line with the UNESCO’s minimum proficiency levels for SDG 4 indicator 4.1.1(a), hence providing a valid and reliable option for reporting on the proportion of children achieving minimum proficiency in numeracy in classes 2 and 3. Additionally, the method of recording children’s performance in ICAN is different compared to existing CLAs, which classify children in different ordinal levels of performance. In ICAN, children’s performance on each attempted item is recorded to understand what children can and cannot do making it possible to apply modern item response models. Similar to most existing CLAs, ICAN deploys a progressive assessment design – only children who can do easier number and operation tasks are given more advanced tasks.
Design and sampling

6. **Who did ICAN 2019 assess?**
   Unlike several school-based assessments, ICAN 2019 defined its target population by age rather than class. This approach is consistent with the existing CLA model of assessing all children regardless of schooling status. Across all districts covered in ICAN 2019, children in the age group of 5-16 years in sampled households were surveyed. This age range takes into account a number of different but interrelated factors, including the prescribed age of entry to and completion of primary school in participating countries, the reality of large proportions of overage children in primary classes in Global South countries and the fact that many older children are not able to handle foundational tasks despite several years of schooling.

7. **Why did ICAN 2019 assess children at home and not in school?**
   Despite significant progress in increasing enrolment, not all children in the school-going age group are enrolled in schools in many countries of the Global South. Further, some students attend schools that are not officially recognised, and education systems in many countries lack a comprehensive list of all schools from which to draw a representative sample. Attendance rates also vary vastly across and within countries, biasing estimates of learning generated by school-based assessments towards students who attend more regularly. By conducting the assessment in sampled households, ICAN 2019 represented all children in the target population, including those who may not regularly attend officially recognised schools.

8. **Why does ICAN assess children orally using a one-on-one format?**
   Previous learning assessment data across the PAL Network shows that on average, half of all children in class 5 are unable to read a simple class 2 level text. These findings are echoed in the World Bank’s Learning Poverty indicator which showed that over 50% of 10 year olds in low- and middle-income countries were not able to read and understand a simple text. Currently, most learning assessments are administered in classroom-based groups using pen and paper tests. Children struggling to read cannot be fairly and accurately assessed using tests that assume their ability to read. ICAN is designed as an oral, one-on-one assessment, as this is the only way to understand what children know and can do, independently of whether or not they can read.

9. **What was the geographical coverage of ICAN 2019? How were districts selected for ICAN 2019?**
   In the first edition of ICAN, the survey coverage was limited to a rural sample and the scale of the survey was limited to one district in each of the 13 participating countries across Africa, Asia, and the Americas. Surveyed districts in participating countries are: Arusha Rural (Tanzania), Betul (India), Ikorodu (Nigeria), Jhenaidah (Bangladesh), Larde (Mozambique), Makwanpur (Nepal), Matagalpa (Nicaragua), Mubende (Uganda), Mwala (Kenya), Ségou (Mali), Tivaouane (Senegal), Toba Tek Singh (Pakistan) and Xalapa Rural (Mexico).

---

5 Surveyed districts in participating countries are: Arusha Rural (Tanzania), Betul (India), Ikorodu (Nigeria), Jhenaidah (Bangladesh), Larde (Mozambique), Makwanpur (Nepal), Matagalpa (Nicaragua), Mubende (Uganda), Mwala (Kenya), Ségou (Mali), Tivaouane (Senegal), Toba Tek Singh (Pakistan) and Xalapa Rural (Mexico).
district of the country, based on pre-determined criteria which aimed to ensure that the predominant medium of school instruction in the selected district was the same as the language in which the assessment tool was to be administered. Existing assessment data was reviewed to ensure that the selected district was not an outlier in terms of children’s foundational numeracy.

10. What was the sampling strategy for ICAN 2019? How were rural communities and households sampled?
The sampling strategy used in ICAN 2019 was designed to generate representative estimates of foundational numeracy for each selected district. The sample design of ICAN 2019 had two-stages, with rural communities sampled in the first stage and households sampled in the second stage. In the first stage, 60 rural communities from each district were sampled using the Probability Proportional to Size (PPS) sampling technique. PPS is a standard sampling technique used widely in the first stage when the sampling units are of different sizes. In the second stage, 20 households were randomly sampled in each rural community. The total sample size for each district was 1200 households (60 rural communities x 20 households). This two-stage design ensured that every household in the district had an equal probability of being selected.

11. What was the sample size for ICAN 2019? Are ICAN 2019 results representative at the country level?
Overall, ICAN 2019 reached 13 rural districts across 13 countries in Africa, Asia, and the Americas (one district in each country). ICAN 2019 assessed over 20,000 children in the age-group of 5-16 years across more than 15,000 households in 779 rural communities. The sampling strategy of ICAN 2019 described above generated representative estimates of numeracy outcomes only for the selected district. Therefore, ICAN 2019 data is not representative of the entire rural population in participating countries.

12. Did ICAN 2019 assess children with disabilities/special needs or children not living in the sampled households?
In ICAN 2019, the assessment approach was designed to be rapid and easy to implement. Assessing children with special needs requires more time, training, and expertise. Also, since ICAN 2019 was a household survey, the sampling design was not suitable for reaching children currently not residing in the sampled households. While it is extremely important to have data on children with disabilities/special needs and children residing away from the sampled households, among others, ICAN 2019 was not designed to collect this information. In 2020 and beyond, PAL Network will be working to expand the scope of ICAN to include children with disabilities and special needs.

---

6 Procedures for sampling households within each community varied depending on procedures used by participating PAL Network members in their own CLA programs. Countries in Eastern and Southern Africa and Nigeria and Senegal from West Africa created houselists at the community level whereas countries in America, South Asia and Mali from West Africa followed the community mapping process and ‘every 5th household’ rule to sample households. Both these methods ensure that households are sampled randomly.
Assessment tools and questionnaires

13. How is the ICAN assessment tool aligned to national curriculum frameworks of the participating countries?
Definitions of foundational numeracy commonly include domains such as number knowledge, measurement, geometry, and simple data display. These are very similar to what most mathematics curricula cover in the early primary grades. The minimum proficiency level descriptor for numeracy under SDG 4.1.1(a) for classes 2 and 3 also requires students to demonstrate skills in number sense and computation, shape recognition, and spatial orientation. Therefore, rather than focusing on specific education objectives in individual countries, ICAN assessment tasks align to UNESCO’s Global Proficiency Framework, which defines minimum proficiency levels that learners are expected to demonstrate more generally.

14. In what languages was ICAN administered? Is there a plan to include more languages?
In its first edition, the ICAN assessment was administered in 11 languages. These languages were selected in consultation with PAL Network members. In most cases, the selected languages are the predominant and/or official languages of the participating countries. The same tool was used for out of school children. ICAN assessment is conducted orally and one on one which means that the field enumerators read out the questions to each child. More languages will be added depending on ICAN’s geographic expansion to new regions.

15. How were the language versions of the ICAN assessment tool created?
ICAN assessment tasks were developed in English and then translated into other languages. Forward translation method was used to translate the tools where a local language expert translated the documents from English into the target language. Translated versions were reviewed by internal teams and piloted in the field to ensure the vocabulary used was appropriate for children.

16. Were all children assessed using the same assessment tool in ICAN 2019? What happens when a child can do tasks of higher difficulty than currently assessed in the ICAN assessment tool?
All children were assessed using the same ICAN assessment tool. Most of the ICAN assessments tasks are aligned to grade 3 of the Global Proficiency Framework. PAL Network’s existing CLAs show that many children are several grade levels behind in terms of their learning outcomes. Hence, the purpose of the ICAN 2019 assessment was to find out whether children have acquired foundational numeracy ability. There are still children in the ICAN 2019 sample who can possibly do numeracy tasks at higher levels than the ones included on the ICAN assessment tool.

---

9 Bangla, English, French, Hindi, Kamba, Kiswahili, Nepali, Portuguese, Spanish, Urdu and Wolof.
17. What contextual information was collected in ICAN 2019? To whom were the contextual questionnaires administered?

In ICAN 2019, contextual questionnaires were used to collect information on key socioeconomic indicators. Contextual information was collected at three levels:

a. For each surveyed child, information was collected from an adult respondent in the sampled household on:
   - Past and current pre-school and school status
   - Enrolment in paid tuition classes
   - Parent’s education

b. For each sampled household, information was collected from an adult respondent in the sampled household on:
   - Basic infrastructure and assets like electricity connection, mobile phone, two-wheeler, etc.
   - Availability of reading material in the household

c. For each sampled rural community, information was collected by field enumerators based on their observation:
   - Basic infrastructure and facilities like government health facilities, tarmac/all-weather road leading to the community, etc.
   - Availability of schools and pre-schools within the boundary of the community

When used as part of a household-based assessment, these questionnaires generate valuable background information about the households and communities surveyed, enabling contextualisation of the results obtained from the assessment.
Implementation

18. When was the ICAN 2019 assessment implemented?
ICAN was implemented in one rural district each in 12 countries towards the end of 2019 and in Matagalpa (in Nicaragua) in early 2020. Since ICAN 2019 was the first round of assessment, it was administered simultaneously across all selected districts.

19. Who managed the ICAN 2019 assessment in selected districts? Who collected the data from sampled households?
Two staff members from each PAL Network member in the participating country were identified as Project Management Team (PMT) members to lead the implementation of the assessment in the selected district. In addition, local District Coordinators (DC) were recruited for the survey duration. ICAN aims to generate awareness and mobilise people around the issue of children’s learning. Therefore, ICAN was implemented by field enumerators from local partner organisations in each sampled district. These partners, including non-governmental organisations and teacher training institutes, work on education related issues in the sampled district and have, in many cases, partnered with PAL members to conduct their own CLA programs in the past.

20. What training was provided to the field enumerators to conduct the ICAN 2019 assessment?
Robust training was an essential part of the ICAN 2019 assessment process. At the district level, training workshops for field enumerators spanned 3 days, including classroom sessions and a field visit to practise ICAN tools and procedures in order to ensure that all implementing teams understood the survey processes correctly and in a standardised manner. Daily attendance was mandatory and field enumerators took a quiz that assessed their understanding of the process.

21. What quality control procedures were implemented in ICAN 2019 to ensure the data quality?
ICAN 2019 roll-out processes were designed to align with PAL Network’s Data Quality Standards Framework (DQSF). PMT members responsible for ICAN 2019 in their countries and local DCs recruited for the project were responsible for carrying out quality control processes in the field. During the survey, the PMTs and DCs assisted field teams needing additional support by visiting rural communities in which the survey was taking place. For communities that PMTs and DCs could not visit physically, they made phone calls to field enumerators to check whether the survey was conducted in accordance with survey guidelines. After the survey was completed, the PMTs and DCs conducted two types of recheck: 1) desk recheck of all survey booklets in which rechecking teams verified whether all essential information had been filled in correctly, and 2) field recheck during which PMTs and

---

DCs revisited selected communities to ensure that field enumerators had collected information correctly. Some communities were selected purposively based on feedback from the desk recheck, and others were sampled randomly for field recheck. Overall, 79% of surveyed communities were field monitored, field rechecked or both.

22. How much did it cost to survey one rural community in ICAN 2019? Who funded ICAN? Can PAL Network fund implementation of ICAN in other countries?
In each sampled district, ICAN 2019 was conducted in 60 rural communities. There is substantial variation of costs between countries but the average cost of completing the assessment in one rural community is approximately 750-1000 USD. Development and first round of implementation of ICAN was funded by Department for International Development (DFID), Hewlett Foundation and Open Society Foundation. PAL Network does not provide direct funding for ICAN to non-members but can work with organisations and partake in fundraising activities for ICAN.

23. Was ICAN administered to children remotely? How can the ICAN assessment be implemented during and after the pandemic situation?
ICAN was implemented in late 2019 and early 2020 and data collection was completed before COVID-19 related lockdowns were imposed in surveyed districts. A team of two trained field enumerators visited each of the 779 rural communities that were surveyed in ICAN 2019. Currently, a technology based remote version of the ICAN assessment tool is not available, but the PAL Network is in the process of developing it. ICAN is conducted one on one which means it does not require a large group of children to be gathered in a classroom. Moreover, simple administration instructions of ICAN can be easily followed by parents, community volunteers, and teachers making data collection possible during and immediately after the pandemic situation. However, any future physical implementation of ICAN by field investigators during and after the pandemic will have to be planned keeping in mind instructions issued by local health authorities.

24. During the current school closures, can ICAN assessment be administered over the phone?
PAL Network has not yet piloted administering the ICAN assessment over the phone. It is possible that some of the tasks on the ICAN assessment tool — like the word problem — can be administered over the phone but it may be difficult to administer the entire tool. To administer the assessment over the phone, strict protocols will have to be developed to ensure there are no disruptions such as network problems or a distracting environment for the child. Additionally, picture-based tasks cannot be used for the assessment unless the child has access to a smart device to see the tool.
Results and impact

25. What are the key findings from ICAN 2019? What recommendations do you have for policy makers and stakeholders, especially in Global South?

Key findings from ICAN\(^\text{12}\) are:

1) A large proportion of children in classes 2-3 across all survey locations are not able to do a set of foundational numeracy tasks that align with the minimum proficiency level requirements for SDG 4.1.1(a). Even in classes 7-8 many children are not able to do numeracy tasks expected in classes 2-3. These findings emphasise the need to focus on foundational learning outcomes in policy and practice. Without acquiring foundational abilities, children will not be able to progress meaningfully in their academic lives.

2) Even after 20 years of the adoption of the Millennium Development Goals, a large proportion of children in the primary school age-group (6-10 years old) are not enrolled in school in some of the survey locations. For instance, in one of the surveyed locations this proportion of out of school children is almost 50%. This situation is likely to get worse post the current COVID-19 pandemic situation. A renewed focus is needed to ensure all children are in school and learning well.

3) ICAN 2019 was administered in households, so it reached all children in the target age group of 5-16 years in the sampled households, regardless of enrolment status. Learning disparities in terms of performance on foundational numeracy tasks are evident between children who are enrolled and those who are not enrolled. These out of school children need to be included in discussions on learning.

26. How can ICAN assessment be integrated into the government’s own system of monitoring learning outcomes?

In 2019, ICAN was implemented by local partner organisations in one rural district each across 13 participating countries. One of the major aims of the ICAN assessment is to generate awareness and mobilise people around the issue of children's learning. ICAN assessment tools and procedures are designed to be simple to understand and quick to implement. These tools and procedures are available in the public domain and other interested users including government monitoring departments can access them from the PAL Network website.\(^\text{13}\) Due to its simplicity, ICAN assessment can easily be integrated with existing monitoring programs to get an understanding of children’s foundational numeracy abilities. To further discuss ICAN’s possible applications, PAL Network members will be organising dissemination sessions at regional, national and local levels.

27. How can ICAN findings influence education policy making and implementation?

PAL Network’s existing CLAs have had a major influence in bringing the issue of learning to the centre of the stage in discussions and debates on education around the world. At the global level, the CLA approach has been accepted as a source to provide rigorous data on foundational reading and numeracy. Several global reports cite data from CLAs to make the


\(^{13}\) For more information, see https://palnetwork.org/ican/ or reach out to info@palnetwork.org.
learning crisis visible and advocate for remedial steps towards improving learning outcomes. As a result of the efforts from all PAL Network members, the SDG indicator 4.1.1(a) was upgraded to Tier I allowing CLAs to contribute towards monitoring progress of SDGs. At the country level, for example, Annual Status of Education Report (ASER) in India 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 in India are now implementing their own learning assessments, sometimes using tools very similar to the tools used in ASER and some are implementing programs aimed at improving learning outcomes. Similarly, in Kenya, government documents prominently mention improvement of learning outcomes as opposed to a focus on inputs as was the case before Uwezo assessments were implemented. Kenya’s National Education Sector Strategic Plan (2018-2022) now has a specific goal on improving learning outcomes.

The sampling strategy used in ICAN 2019 generated a representative picture only of the sampled district. Therefore, ICAN 2019 data from this round cannot be used as a proxy for national estimates and should not be used to compare countries. Rather, this exercise aimed to demonstrate proof of concept in two ways:

- To demonstrate the feasibility of using a common assessment framework and set of tools across very different country contexts; and
- To highlight the ways in which ICAN can be used to generate estimates that respond to important questions confronting countries in the Global South.

ICAN aims to inform policymakers at various stages of the policy cycle including: monitoring and evaluation, agenda setting, policy formulation, and policy implementation. The monitoring and evaluation stage of the policy cycle considers the establishment of monitoring mechanisms to provide information, and processes to evaluate implemented policies or initiatives. In many Global South countries, existing monitoring mechanisms can benefit from ICAN’s focus on foundational learning and including out of school children in the discussion on learning. By administrating a simple-to-use tool and procedures and involvement of local organisations in implementation, ICAN is also intended to be used at the agenda-setting policy stage to create awareness about the gaps in foundational learning of children. By deploying robust standards to collect reliable data, collecting contextual information to diagnose issues, and implementing tailored dissemination to stakeholders at global, regional and local levels, ICAN aims to influence the design and formulation of policy options and the selection of a policy strategy. Lastly, policy implementation stage involves the use of evidence from assessments to improve the effectiveness of the ways in which an initiative is targeted or implemented on the ground. ICAN’s focus on foundational numeracy and findings aimed at highlighting learning gaps is intended to guide curricular or programmatic reforms. This is especially relevant as schools start to reopen post the COVID pandemic.

---

28. How can ICAN be used to support classroom practices, especially post the current pandemic situation?
Before the shock created by this pandemic, around 260 million children, adolescents and youth were already out of school. Even among those who were enrolled, large proportions of children were not acquiring even foundational reading and numeracy skills.15 School closures and other disruptions due to the pandemic will lead to further learning loss. COVID-19 may cause foundational learning to decline even further among children in early primary grades due to unavailability of support at home, especially in less affluent households. A starting point for all learning recovery will be carrying out formative assessments of the students when they return. Teachers will have to know how much learning loss there has been before they can figure out at what level the instruction should be targeted. ICAN with its focus on foundational numeracy and tasks targeting varying ability levels can provide pedagogical insights to teachers and school systems. Due to its simple-to-implement design the ICAN assessment can also be implemented periodically to track progress once teaching-learning activities resume.