PAL NETWORK
People's Action for Learning

International Common Assessment of Numeracy (ICAN) 2022-23 South Asia

Understanding Foundational Literacy and Numeracy in South Asia

আসর ASER BANGLADESH

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The photographs used in this report were taken by staff from the People's Action for Learning (PAL) Network member organisations and the PAL Network Secretariat as they visited rural communities.

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CONTENTS

List of Acronyms

ICAN	International Common Assessment of Numeracy
PAL Network	People's Action for Learning Network
PMTs	Project Management Teams
RRF	Rural Reconstruction Foundation
SHD	Society for Human Development
CLA	Citizen-led Assessment
WISE	World Innovation Summit for Education
FLN	Foundational Literacy and Numeracy
ASER	Annual Status of Education Report
MIA	Medición Independiente de Aprendizajes
GPF	Global Proficiency Framework
MPL	Minimum Proficiency Level
PPS	Probability Proportional to Size
RISE	Research on Improving Systems of Education
GEMR	Global Education Monitoring Report

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Executive Summary

The PAL Network is a South-South partnership of organisations on three continents that conduct citizen-led assessments and actions (CLAs) to improve children's basic reading and math skills. Citizen Led Assessments are conducted orally, one-on-one with each child, and are simple and quick. The goal of this exercise is to obtain reliable data on children's foundational learning that can build awareness and inform policy and practice.

The development of common global educational goals and the need for comparable data to monitor education quality targets have meant that many low- and middle-income countries face increasing pressure to participate in existing international and regional assessment programmes. The PAL Network responded to the need for a comparable, low-cost assessment that meets Global South realities by developing ICAN (the International Common Assessment of Numeracy). ICAN is a simple-to-use and scalable tool that measures children's foundational numeracy and is designed to align with SDG 4.1.1(a).

This report is part of PAL Network's larger commitment to increasing the salience of foundational literacy and numeracy (FLN) in the Global South. Implemented in seven countries across South Asia and Sub-Saharan Africa, this report covers the findings from four South Asian countries (one district per country)—Bangladesh, India, Nepal, and Pakistan. We assessed over 5,000 children from 3,500 households across 230 rural communities, revisiting districts initially surveyed in 2019. This longitudinal approach allows for a comparative analysis of numeracy skills pre- and post-pandemic.

This report underscores the need for sustained and strategic efforts to enhance foundational numeracy, with the PAL Network continuing to play a pivotal role in shaping educational outcomes in the Global South through data-driven advocacy and actionable insights.

The infrastructure in most sampled communities remained stable, though significant advancements in technological access were noted, with increases in mobile phone and computer availability enhancing potential educational technology interventions. Despite the challenges posed by the pandemic, enrollment rates across these communities maintained high levels, reflecting a resilient commitment to educational engagement. However, the impact of the pandemic on numeracy skills was mixed.

The study identified varying trends in numeracy skills across different regions. Jhenaidah (Bangladesh) and Betul (India) experienced declines in numeracy among younger students. In contrast, improvements were noted in Toba Tek Singh (Pakistan) and Makwanpur (Nepal). The variations in numeracy outcomes across the surveyed districts can be better understood through the lens of differing school closure policies during the pandemic. Specifically, Jhenaidah (Bangladesh) and Betul (India) experienced prolonged and continuous school closures, which severely limited children's access to formal education, likely exacerbating the observed declines in numeracy among younger students. Conversely, Toba Tek Singh (Pakistan) and Makwanpur (Nepal) implemented shorter and intermittent school closures, which provided children with relatively more opportunities to attend school and engage in formal learning during the pandemic. This approach appears to have facilitated a more robust recovery in numeracy skills post-pandemic in these regions, suggesting that the nature and execution of school closure policies played a crucial role in shaping educational outcomes during this period.

The implementation of private tuition, as evidenced by the data, varied widely across the sampled districts, suggesting a diverse array of educational strategies and approaches within the region. This variability underscores the adaptive measures communities are compelled to adopt in response to differing educational challenges and resource availability. Moreover, the analysis revealed minimal gender differences in learning outcomes overall, but highlighted significant socio-economic disparities. These disparities indicate that children's educational achievements are profoundly influenced by their socio-economic backgrounds, necessitating focused interventions to address these imbalances.

The findings from this assessment underscore the critical need for targeted educational recovery programs that extend beyond addressing immediate learning losses to fundamentally elevating educational standards across the board. Policymakers are urged to prioritize foundational numeracy and literacy within their educational reforms, recognizing these skills as essential for early academic and future success. Moreover, the ongoing assessment and adaptability of educational strategies, informed by continuous monitoring, are vital for effectively responding to the evolving educational landscape in South Asia.

1. Introduction

The People's Action for Learning (PAL) Network is a collaborative South-South initiative comprising 17 member organizations dedicated to enhancing foundational learning for children across Africa, Asia, and America. PAL Network members implement citizen-led assessments (CLAs) and learning intervention programs to boost learning outcomes.

CLAs evaluate basic reading and math skills in a child-centric manner, conducted orally and individually in homes rather than schools, ensuring inclusion of all children regardless of their educational status. This grassroots approach not only fosters community engagement but also elevates awareness of the educational challenges faced by children in the Global South. By generating consistent and reliable data onlearning, CLAs serve as a direct input into shaping policies and practices, providing snapshots of children's abilities aligned with national curriculum standards.

The PAL Network acknowledges the significance of global educational goals, as outlined in Sustainable Development Goal 4, emphasizing the necessity for data that can accurately reflect education quality across different regions. Traditional assessments, often developed within the context of the Global North, do not adequately address the unique challenges faced by the Global South, such as varying levels of parental literacy and student enrollment. These assessments typically target policymakers and educational administrators, lacking the granularity needed at the grassroots level where a significant number of children in the Global South are falling behind. There is a critical need for evidence that is both relevant and actionable for educators, parents, and local stakeholders in these regions.

In response to the need for an accessible, cost-effective tool that addresses the educational challenges of the Global South, the PAL Network developed the International Common Assessment of Numeracy (ICAN) in 2019. ICAN is an easy-to-use, scalable instrument that evaluates foundational numeracy skills in children, aligning with Sustainable Development Goal 4.1.1 (a). It extends beyond the scope of typical Citizen-Led Assessments (CLAs) by including number knowledge, geometry, measurement, and data analysis. ICAN's innovative approach earned it recognition at the 2023 World Innovation Summit for Education (WISE) Awards.

The PAL Network emphasizes the importance of early identification and intervention in addressing educational challenges. Through policy analysis, the Network identifies and explores strategies to bridge policy gaps at global, regional, and local levels, aiming to enhance foundational literacy and numeracy (FLN) skills.

The 2022-23[1] iteration of ICAN in South Asia leveraged insights from both country-specific CLAs and the inaugural ICAN assessment, underlining the PAL Network's dedication to emphasizing FLN in the Global

[1] *This second round of ICAN in 2022-23 was conducted in parallel in South Asia and Sub-Saharan Africa. For the Sub-Saharan Africa report, please see 'ICAN: International Common Assessment of Numeracy 2022 – Sub-Saharan Africa' by PAL Network (2023).*

South. Conducted in one district each in Bangladesh, India, Nepal, and Pakistan—each with its own version of CLAs named ASER (Annual Status of Education Report), meaning 'impact' in their languages—this round of ICAN engaged over 5,000 children aged 5 to 16 from 230 rural communities and approximately 3,500 households. The survey areas matched those of ICAN 2019, enabling a comparison of numeracy outcomes before and after the pandemic.

Collaboration among PAL Network organizations in these countries was pivotal in the execution and fieldwork of the ICAN project, showcasing a collective effort to address educational disparities.

1.1 COVID-19 and education

The abrupt onset of the COVID-19 pandemic in early 2020 led to widespread school closures globally, with UNESCO (2021) reporting an average closure duration of 17 weeks. The duration varied significantly, with some countries reopening-shutting schools intermittently within a few months, while others waited until 2021 or even 2022.

The closures sparked intense debates on ensuring continuity of learning and their impact on academic outcomes. Early predictions foresaw significant learning losses (Azevedo, 2020; Kaffenberger, 2021), prompting governments to implement innovative measures. These included homework packs, WhatsApp messages, dedicated television and radio programs, and digital platforms for administration and teacher development. As schools began to reopen, studies emerged to empirically assess the impact on learning outcomes, revealing substantial losses in developed countries (Moscoviz & Evans, 2022; Patrinos, Vegas & Carter-Rau, 2022), while findings from the Global South were varied.

PAL Network members have significantly contributed to this body of research. The ASER 2022 report from India indicated a notable decline in literacy outcomes from 2018 to 2022, with significant regional and grade-level variations. Conversely, numeracy outcomes were more stable, with improvements noted in some areas. Uwezo Uganda observed an increase in both the lowest and highest reading levels, suggesting growing disparities in learning outcomes. ASER Pakistan reported minimal losses in both reading and math, specifically in grade 3. In Southern Mexico, Medición Independiente de Aprendizajes (MIA) documented significant learning deficits among 10 to 15-year-olds.

This pattern of mixed results extends to other studies. A multi-country survey in Africa found no significant decline in the percentage of Grade 6 students achieving minimum proficiency levels (UIS & ACER, 2022), in contrast to studies from Brazil (Lichand, 2021) and South Africa (Shepherd & Mohohlwane, 2021), which showed notable secondary school learning losses.

This report enhances the existing literature by presenting new evidence from rural areas in four South Asian countries, complementing a similar study conducted in Africa and released in March 2023 (PAL Network, 2023).

1.1.1 School Closures

Amidst the global COVID-19 pandemic, governments around the world implemented significant measures to contain the spread of the virus. These measures included temporary closures of educational institutions to limit the spread of the disease. A brief overview of how Bangladesh, India, Nepal, and Pakistan navigated these challenges is presented below.

Bangladesh: The COVID-19 pandemic prompted the Bangladeshi government to implement one of the longest educational institution closures globally, affecting approximately 37 million children. The Ministry of Education initiated closures on March 17, 2020, with schools intermittently reopening and closing until February 2022. In response, the government launched the COVID-19 School Sector Response (CSSR) Project, significantly enhancing online learning and teacher training. However, the efforts faced challenges due to a pronounced digital divide, impacting equitable access to educational resources. In September 2021, schools began reopening in phases, following strict health guidelines such as mask mandates, reduced classroom capacities, and regular disinfection protocols. Despite efforts to manage education remotely during the

pandemic, the long-term effects of the closures are expected to have a disproportionate impact on disadvantaged students, further deepening educational inequality in the country.

India: During the COVID-19 pandemic, India implemented school closure policies as part of its broader strategy to contain the virus. Schools across the country were shut down in March 2020, following the nationwide lockdown to minimize transmission among students, teachers, and communities. These closures affected over 250 million students, prompting a rapid shift to online education. However, the digital divide posed significant challenges, especially in rural areas where access to the internet and digital devices was limited. Prolonged closures led to concerns about learning losses, increased dropout rates, and mental health issues among students. Over time, the government introduced guidelines for the phased reopening of schools, with safety measures like reduced class sizes, social distancing, and frequent sanitation, but the reopening was largely dependent on local COVID-19 caseloads. In some states, schools reopened briefly, only to close again due to surges in cases. The policy remained dynamic, balancing public health concerns with the need to ensure continued education.

Nepal: Nepal implemented school closure policies early in the COVID-19 pandemic to curb the spread of the virus, beginning with a nationwide lockdown in March 2020. Schools, colleges, and educational institutions were closed, affecting millions of students across the country. The shift to remote learning exposed deep inequalities, as many students, particularly in rural areas, lacked access to the internet, devices, and reliable electricity, limiting their ability to continue their education. The government introduced distance learning programs through television, radio, and online platforms, but these efforts struggled to reach all students effectively. As the pandemic persisted, the prolonged closures raised concerns about learning gaps, dropout rates, and the social and psychological well-being of students. When COVID-19 cases subsided, the government allowed for a phased reopening of schools with strict health protocols, including mask mandates, social distancing, and hand hygiene practices. However, localized surges in cases often led to the reclosure of schools, making the policy dynamic and contingent on regional infection rates.

Pakistan: In Pakistan, school closure policies were a key measure in the country's response to the COVID-19 pandemic. The government closed all educational institutions in March 2020 as part of a nationwide lockdown to limit the virus's spread. These closures affected over 40 million students, leading to a rapid transition to remote learning. However, access to online education was a major challenge, especially for students in rural areas and underprivileged communities, where internet connectivity and access to digital devices were limited. The government attempted to address this gap through educational broadcasts on television and radio, but these measures were only partially effective. As the pandemic situation improved, schools reopened in phases beginning in September 2020, with safety protocols such as staggered classes, reduced attendance, mask mandates, and frequent sanitization. However, subsequent waves of the virus prompted further closures, making the policy reactive and dependent on the severity of local outbreaks. The interruptions in schooling raised concerns about long-term learning losses, mental health issues, and increased dropout rates, particularly for girls and disadvantaged children.

These examples illustrate the strategies and challenges faced by countries in ensuring educational continuity and equity during the pandemic, highlighting both innovative solutions and areas needing further attention to bridge access gaps. More information on school closures in each of the countries/districts covered in this report is provided in **Appendix C: Notes on School Closures.**

1.2 Objectives of the project

- To collect comparable data on the foundational numeracy levels of children aged 5-16 from rural communities in four South Asian countries, aiming to raise awareness and influence policy and practice.
- To evaluate the impact of the COVID-19 pandemic on foundational numeracy by comparing these findings with those from ICAN 2019.
- To contribute to the evidence base on children's foundational literacy and numeracy skills (SDG 4.1.1a) in South Asia and the Global South, supporting policy discussions and the development of interventions.

1.3 Tools

The ICAN 2022-23 (South Asia) study utilizes two primary instruments: a) the ICAN assessment tool and b) contextual questionnaires designed for data collection at the village, household, and child levels.

1.3.1 Assessment Tools

Foundational numeracy encompasses knowledge of numbers, measurement, geometry, and basic data interpretation. The minimum proficiency level for numeracy, as outlined under SDG 4.1.1(a), expects learners to exhibit skills in number sense, computation, shape recognition, and spatial orientation. The ICAN assessment is structured according to the Global Proficiency Framework (GPF), which specifies the minimum proficiency levels across a broad educational spectrum rather than narrow, country-specific educational goals. ICAN comprises 26 items, with half focusing on number knowledge—counting, number comparison, number recognition, arithmetic operations (including and excluding carry-over, borrow, and remainder), and applying these skills in real-life scenarios. The remaining items cover geometry, measurement, and data interpretation. A breakdown of the distribution across domains is depicted in Figure 1.

More information about ICAN can be found in the report released in 2020 **(PAL, 2020)**.

ICAN's design contributes directly to the monitoring indicators for SDG4.1.1(a). In August and September 2020, a policy-linking workshop with educators and curriculum experts in Kenya and Nigeria was conducted to align ICAN items with the GPF, assess the level of alignment, and determine cut-off scores to establish benchmarks for 2nd and 3rd grade proficiency levels. Following the item mapping, ICAN received an "additionally aligned"[2] classification to the GPF. The benchmarking defined the Minimum Proficiency Level (MPL) for Grade 2 as 17 correct responses and for Grade 3 as 21 correct responses. These benchmarks are utilized in this report to discuss numeracy outcomes. Further information on the policy-linking process and its outcomes is available in the Policy Linking report **(PAL, 2020).**

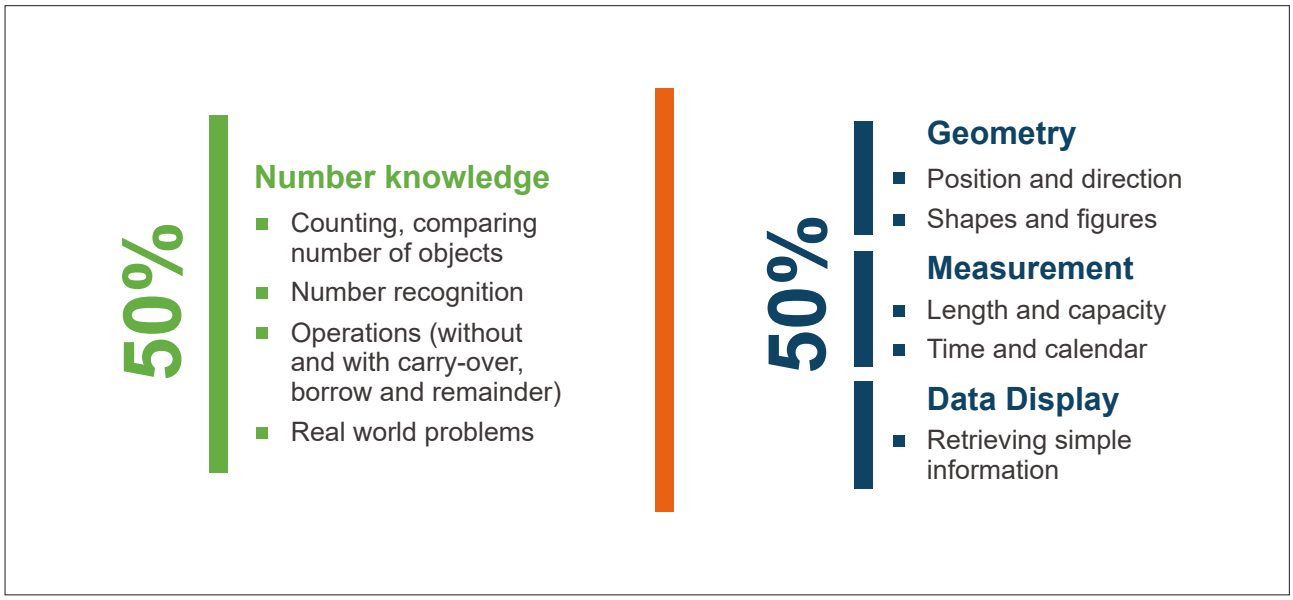


Figure 1. Overview of ICAN subdomains and skills

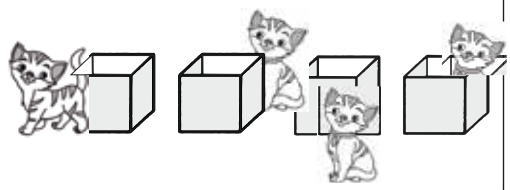
[2] *This classification indicates a high degree of overlap between the skills assessed by the ICAN tool and those covered by the GPF framework. However, it also suggests that some sub-constructs within the GPF may not be fully addressed by ICAN's current assessment items. Further development of ICAN's tool may be necessary to achieve comprehensive alignment with the GPF.*

1.3.2 Samples of ICAN tool

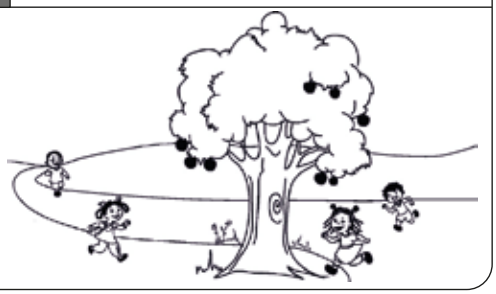
NUMERACY TEST: SAMPLE 1

SET 1

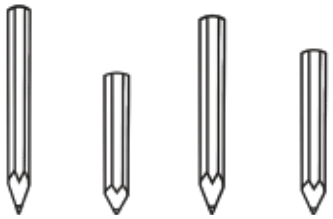
Q1 In this picture, which cat is inside the box?



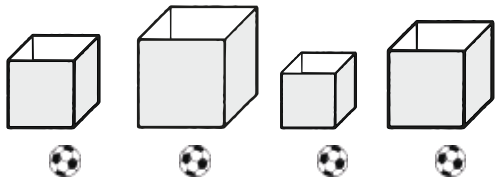
Q2 In this picture, which child is farthest from the tree?



Q3 In this picture, which is the shortest pencil?



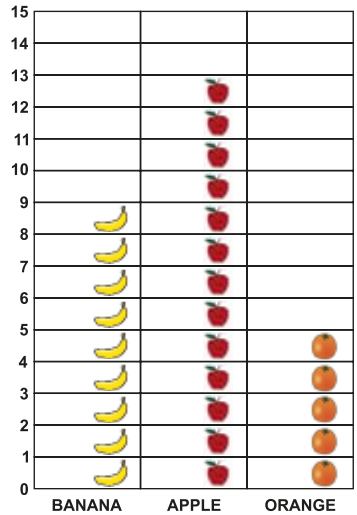
Q4 Here are 4 balls of the same size. Now look at the box kept next to each ball. If we completely fill each box with the kind of balls shown, which box will have the most number of balls?



NUMERACY TEST: SAMPLE 1

SET 1

Look at the chart given below carefully.

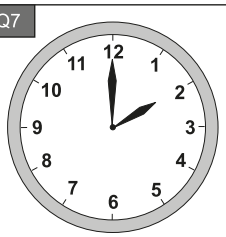


Q5 How many apples are there?

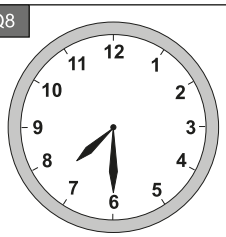
Q6 How many more bananas are there than oranges?

What is the time in this clock?

Q7



Q8



Look at the calendar given below.

MARCH 2022

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Q9 What is the day on 4th March?

Q10 What is the date on the second Monday of March?

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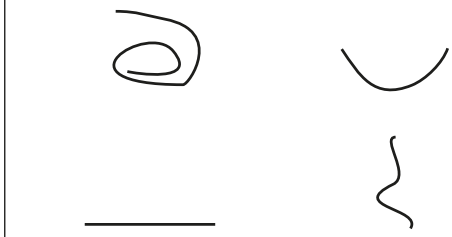
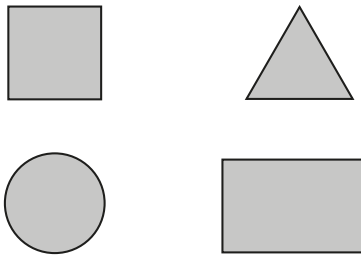
SET 1

Q11 Which of these is a straight line?



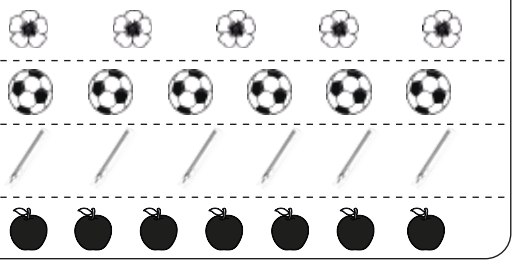
Q12 Look at these shapes. Which of these is a triangle?



Q13 How many birds are here? Choose the correct number.

6 8 9 5

Q14 There are 4 groups of objects given here. Look at them carefully. Which group has the most number of objects?



SET 2

Read all numbers

Q15 3 Q16 2 Q17 8 Q18 0 Q19 9

Solve the following questions.

Q20

$$\begin{array}{r} 32 \\ +\ 15 \\ \hline \\ \hline \end{array}$$

Q21

$$\begin{array}{r} 46 \\ -\ 21 \\ \hline \\ \hline \end{array}$$

Q22 $2 \times 4 =$

Q23 $9 \div 3 =$

SET 3

Read all numbers

Q24 48 Q25 22 Q26 84 Q27 97 Q28 30

Solve the following questions.

Q29

$$\begin{array}{r} 56 \\ +\ 17 \\ \hline \\ \hline \end{array}$$

Q30

$$\begin{array}{r} 78 \\ -\ 29 \\ \hline \\ \hline \end{array}$$

Q31

$$\begin{array}{r} 42 \\ \times\ 6 \\ \hline \\ \hline \end{array}$$

Q32 $7\overline{)93}$

Q33 Listen to the question carefully, solve and answer.

There were 43 children in the park. Out of these, 25 of them have gone home. How many children are left in the park now?

Q34 Listen to the question carefully, solve and answer.

A shopkeeper has 48 apples. He keeps 3 apples in each box. How many such boxes will he need to keep all the apples?

1.3.3 Contextual questionnaire

The ICAN 2022-23 (South Asia) study utilized contextual questionnaires to gather data on crucial socio-economic indicators at three distinct levels:

- **For each surveyed child:**
  - Past and current preschool and school attendance
  - Enrollment in paid tuition classes
  - Parental education levels
  - Duration of school closures due to COVID-19
- **For each sampled household:**
  - Basic infrastructure and assets
  - Presence of reading materials in the household
- **For each sampled community:**
  - Infrastructure and facilities available
  - Existence of schools and preschools

SurveyCTO, a renowned digital data collection platform, was employed for efficient data gathering. The assessments for children were printed on paper to facilitate easy interaction. Additionally, children were provided with blank paper and writing instruments for calculations as needed. Responses were digitally recorded by surveyors using SurveyCTO. The contextual questionnaire was exclusively conducted through this digital application.

2. Implementation: Sampling and Data Collection

2.1 Sampling

In this study, we revisited the enumeration areas initially surveyed in ICAN 2019: Betul (India), Jhenaidah (Bangladesh), Makwanpur (Nepal), and Toba Tek Singh (Pakistan), allowing for pre- and post-pandemic data comparisons of numeracy learning outcomes. A two-stage sampling design was implemented to accurately represent the target population, with a consistent sampling strategy across all areas.

The sampling commenced with the Probability Proportional to Size (PPS) technique at the first stage, selecting rural communities within each district based on population size. The second stage involved randomly choosing 20 households from each selected community. While the same communities from ICAN 2019 were generally resurveyed, exceptions were made for a few that could not be revisited. In all communities households were resampled as specific households from 2019 were not identified for follow-up.

The ICAN 2022-23 (South Asia) assessments were conducted in households, targeting children aged 5-16, to include all children irrespective of their schooling status. This age range was selected to account for primary school entry and completion ages, the presence of older children in primary classes, and the observation that many children in the Global South struggle with basic tasks despite years of education.

The development and execution of the sampling plan were collaborative efforts between PAL Network member organizations and the Secretariat. These organizations identified the areas for survey, established the sampling frame for rural communities, collaborated with sampling experts, and managed the documentation of surveyed and replacement communities through Project Management Teams (PMTs) using specific sampling formats.

Data collection occurred between December 2022 and January 2023 in India, Nepal, and Bangladesh, and between February and early March 2023 in Pakistan. Access and fieldwork challenges prevented visits to 10 of the 60 targeted villages in Toba Tek Singh (Pakistan). Consequently, statistics for 2019 in this district have been adjusted to reflect the 50 villages consistently sampled across both rounds. Further details on the sampling are illustrated in Figure 2 and Table 1 below.

Figure 2: ICAN 2022 (South Asia) coverage

Table 1. Sample size by district

Sampled district (country)	Surveyed rural communities		Surveyed households		Assessed children	
	2019	2022	2019	2022	2019	2022
Betul (India)	60	60	1200	1229	1194	1057
Jhenaidah (Bangladesh)	60	60	1200	1198	893	1309
Makwanpur (Nepal)	60	60	1200	1230	1023	1258
Toba Tek Singh (Pakistan)	60	50	1198	1019	1616	1365
Grand total	**240**	**230**	**3417**	**3657**	**4726**	**5030**

2.2 Training

The ICAN 2022-23 (South Asia) initiative adhered to Citizen-Led Assessment (CLA) principles of partnership, engaging with local institutions, NGOs, and volunteers in each sampled district for assessment administration. Key to the survey's success was thorough training, structured in two stages: country-level and district-level workshops.

At the country level, a three-day virtual training session was organized by the PAL Network Secretariat for the Network member organizations involved in the project. Given the in-country teams' previous experience with CLAs and PAL Network's common assessments, the training duration was concise, with each day's session lasting three hours. The main goal was to prepare the country-level Project Management Teams (PMTs), who would subsequently train field enumerators within their districts. Training covered field operations, quality control systems, and financial reporting.

The district-level training, conducted by PMTs, aimed to equip field enumerators with a practical understanding of the survey processes. Spanning three days, these workshops included classroom sessions and a practice field visit, with daily attendance and a quiz to evaluate the enumerators' grasp of the procedures.

These training workshops were critical for standardizing survey process comprehension among all implementing teams. The practice field visit was particularly crucial, allowing teams to familiarize themselves with the tools and methodologies before actual survey execution, ensuring consistent data quality across districts. Figure 3 depicts the training methodology.

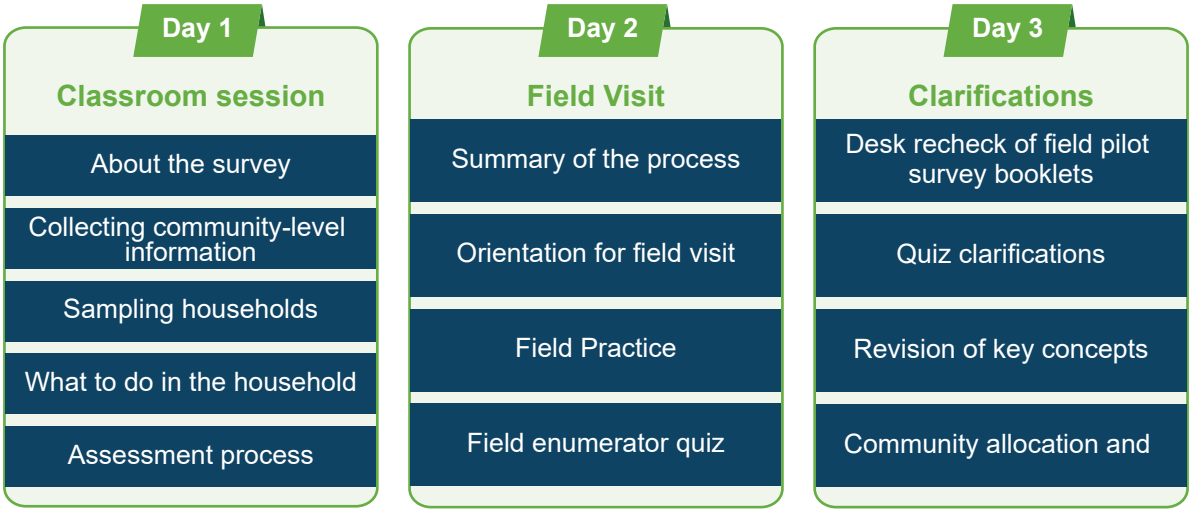


Figure 3: Training outline

2.3 Quality control

The ICAN 2022-23 (South Asia) survey incorporated comprehensive quality control measures at all phases to guarantee the integrity of survey processes and the reliability of data. These measures were founded on two principal guidelines: simplicity and actionability. Emphasizing simplicity ensured that the quality control processes were easily scalable and could be efficiently implemented by local field enumerators. This approach facilitated rapid training across various skill levels, ensuring accurate data collection in the field. The principle of actionability was aimed at maintaining high-quality standards throughout the survey by instituting checks at every step and initiating prompt corrective actions if needed, including resurveying communities if initial surveys failed to meet quality benchmarks.

Quality control during the survey: Monitoring

Project Management Teams (PMTs) actively monitored the survey by visiting communities assigned to enumerators. This presence supported field enumerators and provided additional assistance where necessary, ensuring adherence to survey protocols.

Quality control after the survey: Recheck

Post-survey, PMTs overseeing fieldwork undertook two forms of rechecks to validate the survey's accuracy:

- **Desk Recheck:** This involved a comprehensive review of all collected data using the SurveyCTO application, ensuring all crucial details were accurately recorded. Key activities during the desk recheck included:
  - **a.** Checking each tablet to ensure all required data was completed and accurately filled.
  - **b.** Using the summary of the survey provided by the core team to verify that all questionnaires were filled in correctly.
  - **c.** Identifying villages where data was incomplete or questionable for further field recheck.
- **Field Recheck:** Selected communities were revisited to confirm that field enumerators had accurately gathered information according to protocol. This recheck process includes:
  - **a.** Finalizing villages for recheck based on feedback from the desk recheck and the quality of surveyors assessed during the Surveyor Training.
  - **b.** Preparing for field visits by ensuring all necessary materials and information are ready.
  - **c.** Conducting the field recheck by visiting selected households to verify the accuracy and completeness of the data collected.
  - **d.** Making a decision about resurvey based on the completeness of the field recheck form and any discrepancies noted.

The field recheck combined purposive selection, based on desk recheck feedback, and random sampling to cover a broad spectrum of survey locations.

These quality control steps underscored the survey's commitment to generating trustworthy data by systematically verifying fieldwork accuracy and data completeness.

3. Results

3.1 Context

Our contextual survey provides insights into various living conditions that may impact the performance of children within our study group. The districts we sampled display a range of access to basic infrastructure, illustrated in Figure 4. Generally, there is significant access to in-house toilets and electricity across most districts. However, Betul (India) stands out, with only about 70% of households reporting access to a toilet. The availability of piped water is notably lower in these areas, with Makwanpur (Nepal) being the exception where this facility is relatively widespread. Individual transport infrastructure has seen an increase from previous years with Toba Tek Singh (Pakistan) reporting a 25% increase in the ownership of motorized two-wheelers (e.g., motorbikes).

Since 2019, these indicators have largely remained stable, which aligns with expectations given the complexity and government intervention required for improvements in sanitation infrastructure and electricity access. Noteworthy exceptions include the enhanced availability of toilets in Jhenaidah (Bangladesh), electricity in Makwanpur (Nepal), and piped water in Betul (India). Conversely, the provision of piped water in Toba Tek Singh (Pakistan) has seen a significant decline.

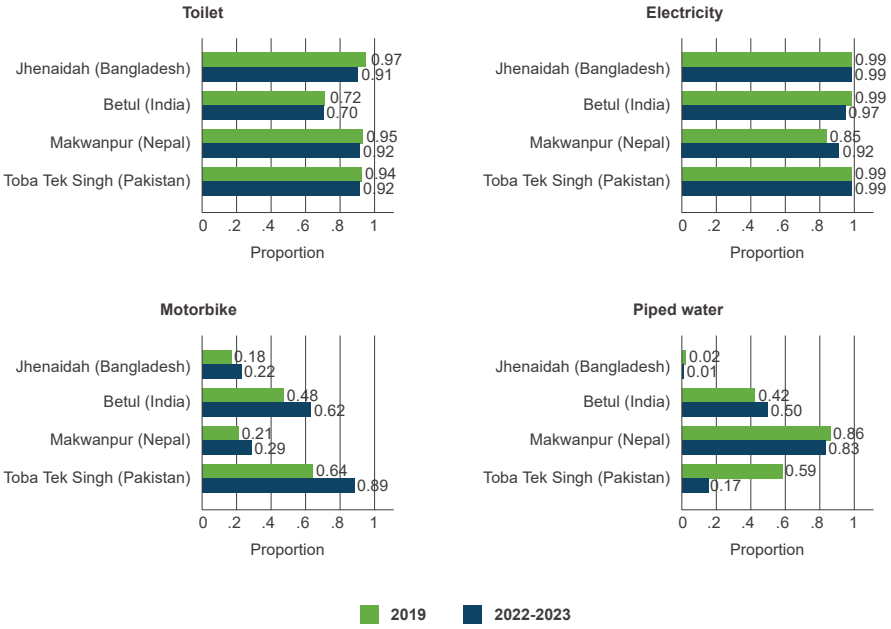


Figure 4: Availability of selected household indicators by district

We can examine the availability of certain household items to gain insights into the environment where children learn, noting any changes since the initial data collection in 2019. Figure 5 reveals an increase in access to technological products across various countries, with the exception of radios, whose availability has remained constant. Over 90% of households in the four districts now have access to mobile phones. Although still limited, computer access in these districts has risen by 2 to 7 percentage points between 2019 and 2022-23.

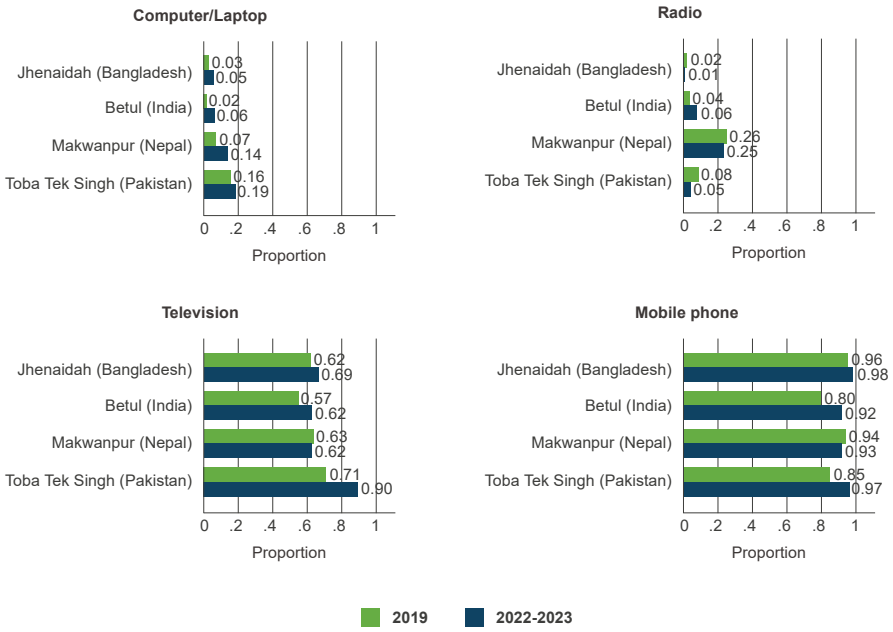


Figure 5: Availability of selected technological household goods by district

3.2 Schooling

In terms of schooling, our metrics show no significant shifts in enrollment rates, as illustrated in Figure 6. Survey results from four districts indicate that nearly all children across different age groups continue to be enrolled in school, with little variation observed since 2019. Two and a half years after the start of the pandemic, the enrollment rates for the children surveyed have not significantly decreased.

In terms of school types, the majority of children in our rural study are enrolled in government schools. However, a considerable number of children attend private schools, with notably high proportions in Makwanpur (Nepal) for lower primary schools (40% in 2022-23) and in Jhenaidah (Bangladesh) for upper primary schools (44% in 2022-23). In Makwanpur, there has been a 4-5 percentage point increase in private school enrollment, whereas in Toba Tek Singh (Pakistan), there has been a 5-7 percentage point decline. In Betul (India) and Jhenaidah (Bangladesh), a decrease in private school enrollment is primarily observed in lower primary schools.

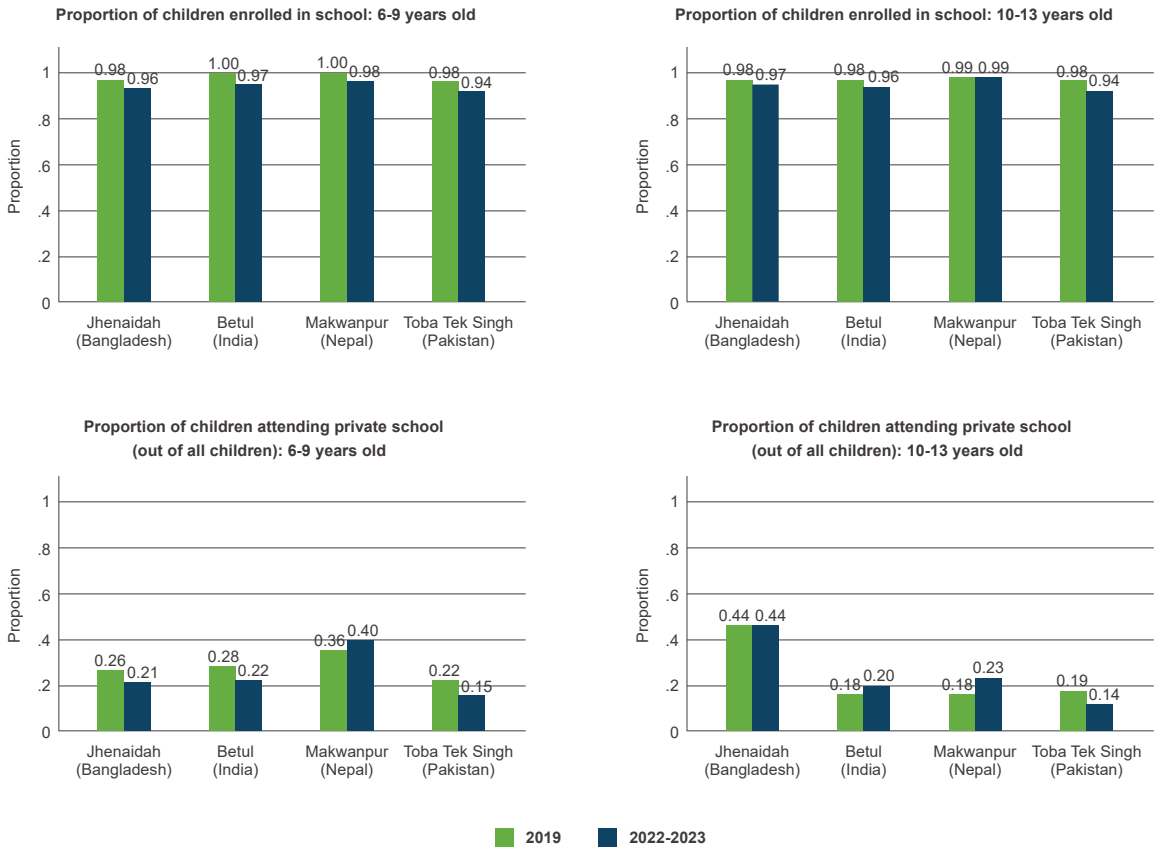


Figure 6: Enrollment status overall and in private schools by age group and district

We also explored various common "educational practices" to provide further context for our findings. The proportion of children participating in private tuition varies significantly by district, as illustrated in Figure 7. The percentage is as high as 67% in 2022-23 as in Jhenaidah (Bangladesh) but just 13% in Betul (India). This trend of seeking external academic support has remained largely unchanged, with the notable exception of Toba Tek Singh (Pakistan), which saw an increase from 40% to 68% between 2019 and 2022-23. Moreover, the percentage of children taking educational materials home (from schools or other educational institutions) is generally low, at 10% or less, and has declined in three out of four districts examined. Betul (India) stands out as the sole district where this practice has increased, by 3 percentage points.

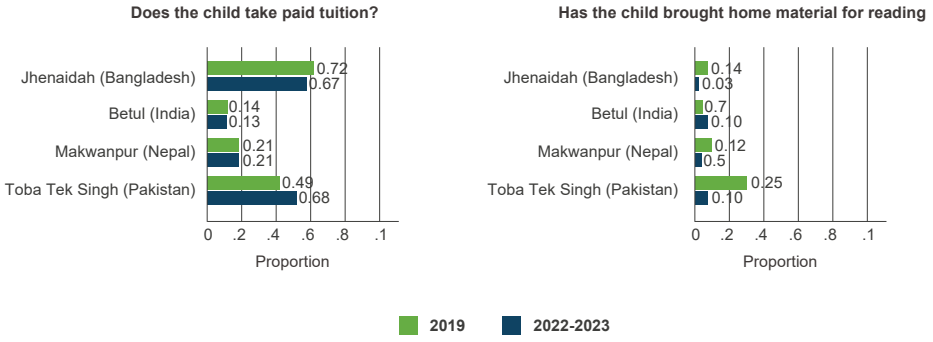


Figure 7: Education practices in households by district

3.3 Learning outcomes

Exploring the variation in foundational mathematics learning outcomes since 2019 within our selected areas, we turn to specific tasks for insight. Figure 8 presents the percentage of children correctly answering tasks aligned with Grade 2 standards as per the Global Proficiency Framework (GPF)[3].

The data reveals mixed trends in performance. Early signs, to be elaborated upon later in this report, suggest varied shifts in proficiency. In Makwanpur, Nepal, there is a notable improvement across all tasks, with increases ranging from 6 to 18 percentage points, except in shape recognition and quantity comparison for Grades 4-6. Conversely, Betul, India, experiences declines in nearly all areas, with drops between 3 and 12 percentage points, excluding data comprehension tasks for Grades 4-6. Jhenaidah (Bangladesh), shows significant reductions, particularly in data understanding for Grades 2-3 (by 9 percentage points) and two-digit number recognition, with decreases of 18 percentage points in Grades 2-3 and 6 percentage points in Grades 4-6. However, this district also displays stability and slight improvements in counting and comparison tasks. In Toba Tek Singh, Pakistan, there's a general trend of increased performance or consistent high achievement, with the exception of a 9 percentage point decline in counting and comparison tasks for Grades 2-3.

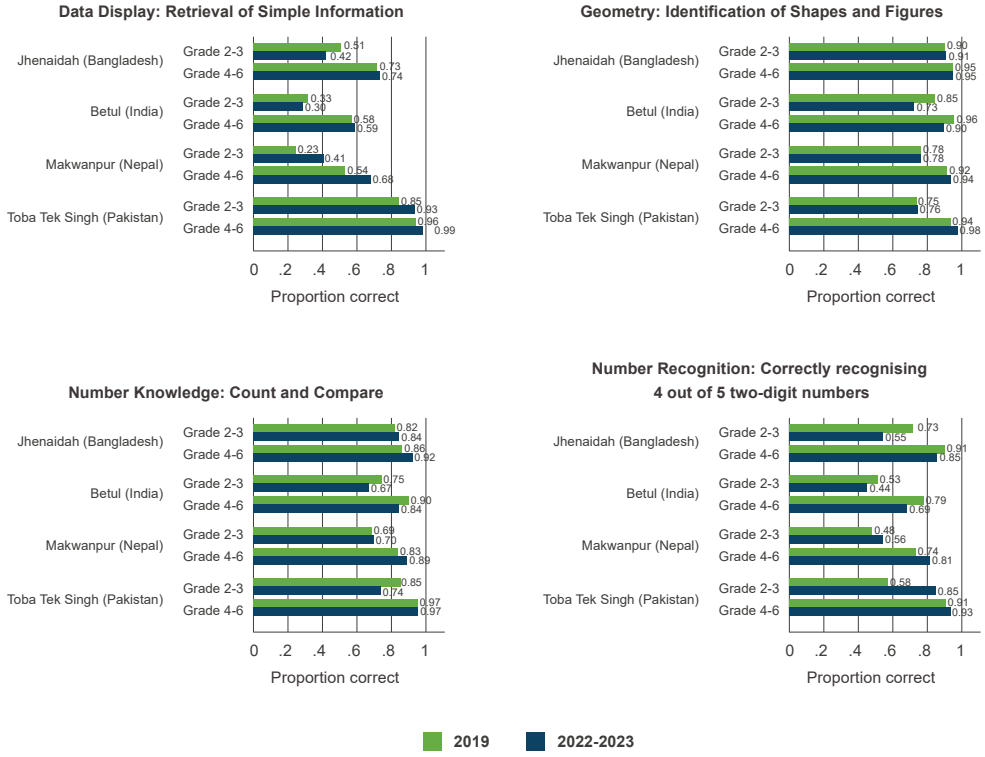


Figure 8: Proportion of students answering correctly to selected grade 2-level items by district and grade group

[3] *The correspondence between all ICAN items and the GPF descriptors is provided in Appendix A: Mapping of ICAN Items to Global Proficiency Framework Descriptors.*

We also explore tasks of somewhat greater complexity, corresponding to Grade 3 of the GPF. Figure 9 shows the percentage of correct responses for Grades 4-6 and 7-8. It becomes clearer that in Jhenaidah (Bangladesh) and Betul (India), performance declines in Grades 4-6, except for complex subtraction tasks in Jhenaidah, while remaining more consistent in Grades 7-8. Conversely, in Makwanpur (Nepal) and Toba Tek Singh (Pakistan), performance either improves across most tasks and grades or remains stable at high levels.

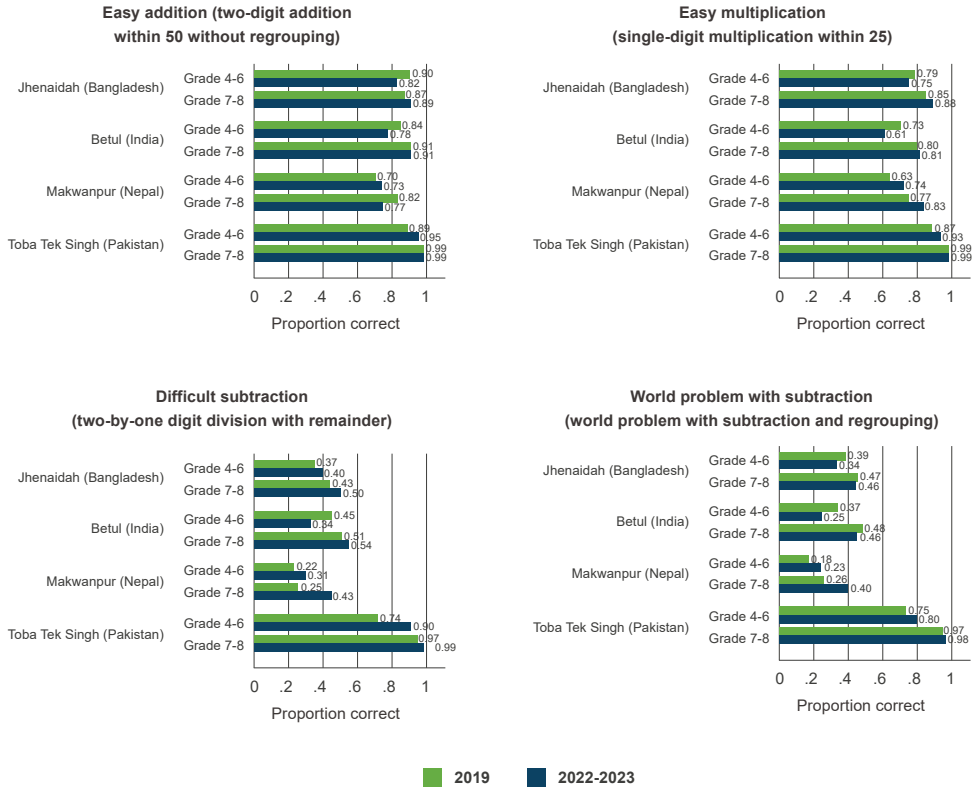


Figure 9: Proportion of students answering correctly to selected grade 3-level items by district and grade group

Another perspective on the performance of surveyed children in foundational math involves examining key performance. Among several indicators, we focus on the MPLs here, which are based on the number of correct answers children provided throughout the assessment. In a policy linking exercise conducted in 2020 (PAL Network, 2020), a threshold of 17 correct responses was established for the MPL at Grade 2 and a threshold of 21 correct responses for the MPL at Grade 3[4].

Figure 10 presents the impact of applying the initial threshold to our 2019 and 2022-23 data. It reveals that a significant number of children across all districts are failing to acquire foundational skills during their education. The exception is Toba Tek Singh in 2022-23, where over 50% of children in Grades 2-3 have met the MPL. In contrast, in Jhenaidah (Bangladesh), Betul (India), and Makwanpur (Nepal), less than 25% children pass the MPL for Grade 2. Furthermore, for Grades 4-6 in these districts, at least one in three children has not acquired skills appropriate for Grade 2. This issue predates the pandemic, evident from 2019 data, indicating that the educational challenges cannot solely be attributed to the pandemic's disruptions, even if certain districts are experiencing worse performance compared to before COVID-19.

Additionally, Figure 10 highlights two distinct trends. In Jhenaidah (Bangladesh) and Betul (India), there is a noticeable decrease in the percentage of children achieving the MPL for Grade 2, dropping between 6 and 10 percentage points across Grades 2-3 and 4-6. Interestingly, this decline does not extend to Grades 7-8, likely because these students were in Grades 4-5 in 2019 and may have already acquired the Grade 2 competencies before the pandemic-induced school closures. Conversely, in Makwanpur (Nepal) and Toba Tek Singh (Pakistan), there is an observable improvement in performance across grade levels, with increases ranging from 6 to 17 percentage points.

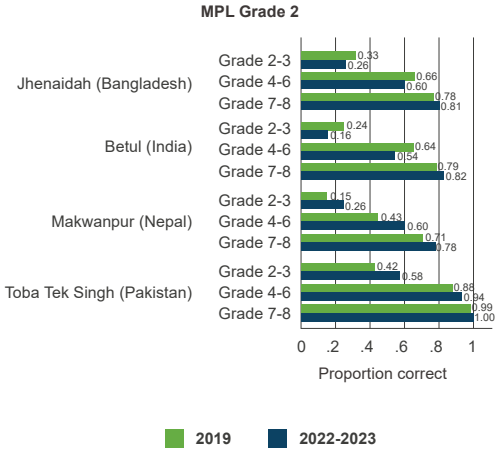


Figure 10: Proportion of students achieving minimum proficiency levels (MPLs) at Grade 2 by grade group and district

[4] There are of course other alternative ways to provide a summary of children's performance in the assessment. We present a brief discussion of these in Appendix B. All these measures point to similar results.

We can also interpret these MPL findings through the lens of learning trajectories, as suggested by Kaffenberger (2019). Learning trajectories, a method recently adopted by research initiatives like the Research on Improving Systems of Education (RISE) Programme and the Global Education Monitoring Report (GEM-R), visually map out learning progress over time using cross-sectional data. These graphical representations depict children's performance on specific indicators across various ages or grades.

The learning trajectories illustrated in Figure 11 reveal a consistent narrative. In Jhenaidah (Bangladesh) and Betul (India), there is a noticeable dip in performance from Grades 2 to 5. Conversely, in Makwanpur (Nepal) and Toba Tek Singh (Pakistan), there is an observable enhancement in performance across all grades.

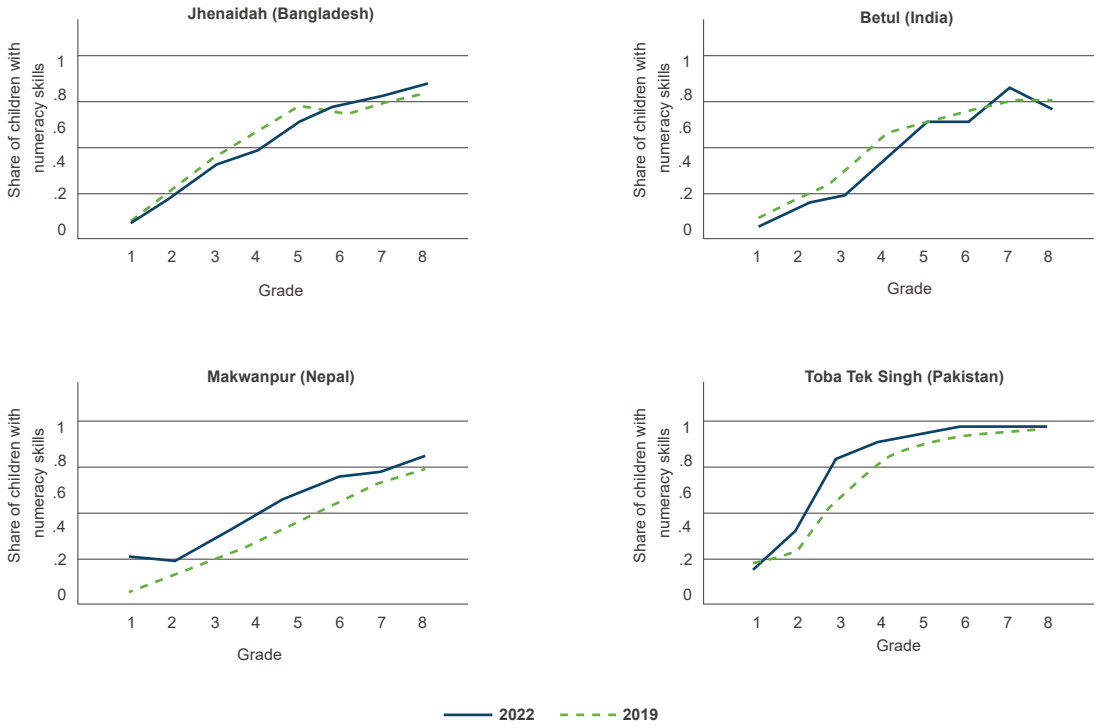


Figure 11: Proportion of students achieving minimum proficiency levels (MPLs) at Grade 2 by grade and district.

Figure 12 indicates that similar conclusions can be drawn when examining the MPL for Grade 3, although the decline in Jhenaidah (Bangladesh) and Betul (India) seem smaller (between 2 and 8 percentage points). Employing this stricter benchmark, it is observed that in every district, with the exception of Toba Tek Singh (Pakistan), over two-thirds of children in Grades 4-6 have not attained the necessary skills for Grade 3. Furthermore, even among children in Grades 7-8, approximately half lack Grade 3 level skills.

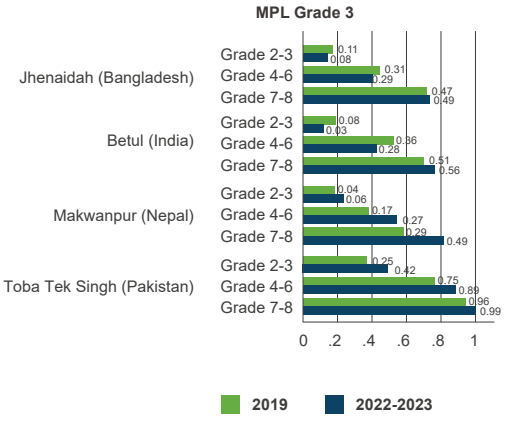


Figure 12: Proportion of students achieving minimum proficiency levels (MPLs) at Grade 3 by grade group and district

Note that our analysis studies average changes in performance, and that these trends might differ across subgroups (i.e. household socioeconomic status).

IIn Figure 13, we compare learning trends between boys and girls and observe no significant differences overall. However, in Jhenaidah, Bangladesh, girls experienced more pronounced learning losses than boys, particularly in Grades 2-3 and also in Grades 4-6. Conversely, in Betul, India, boys faced greater learning setbacks than girls, especially in Grades 2-3 and also in Grades 4-6. Meanwhile, in both Makwanpur, Nepal, and Toba Tek Singh, Pakistan, we noted performance improvements for both genders.

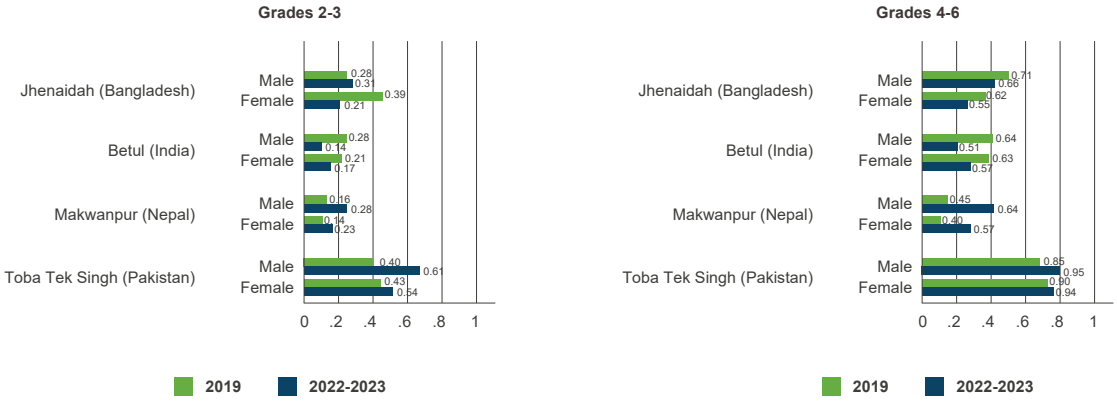


Figure 13: Proportion of students achieving minimum proficiency levels (MPLs) at Grade 2 by grade group, district, and gender

We can conduct a comparable analysis to determine if there are varying trends among households based on the educational attainment levels of the parents. Figure 14 contrasts the performance of children from households where at least one parent has attended school against those from households where neither parent has. The data does not reveal any distinct trends linking learning losses to whether or not parents have attended school. In fact, in Betul (India), children with at least one parent who attended school appear to experience greater learning losses. However, in other districts, the general trend is consistent across both groups.

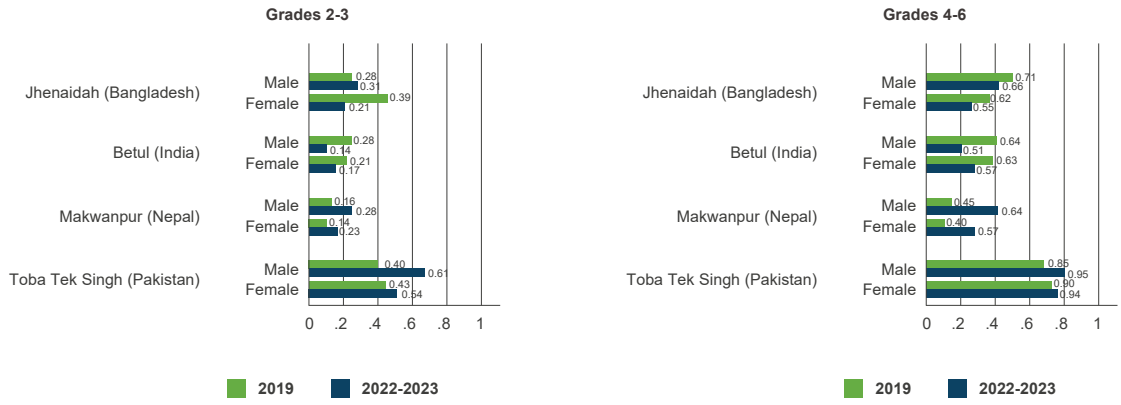
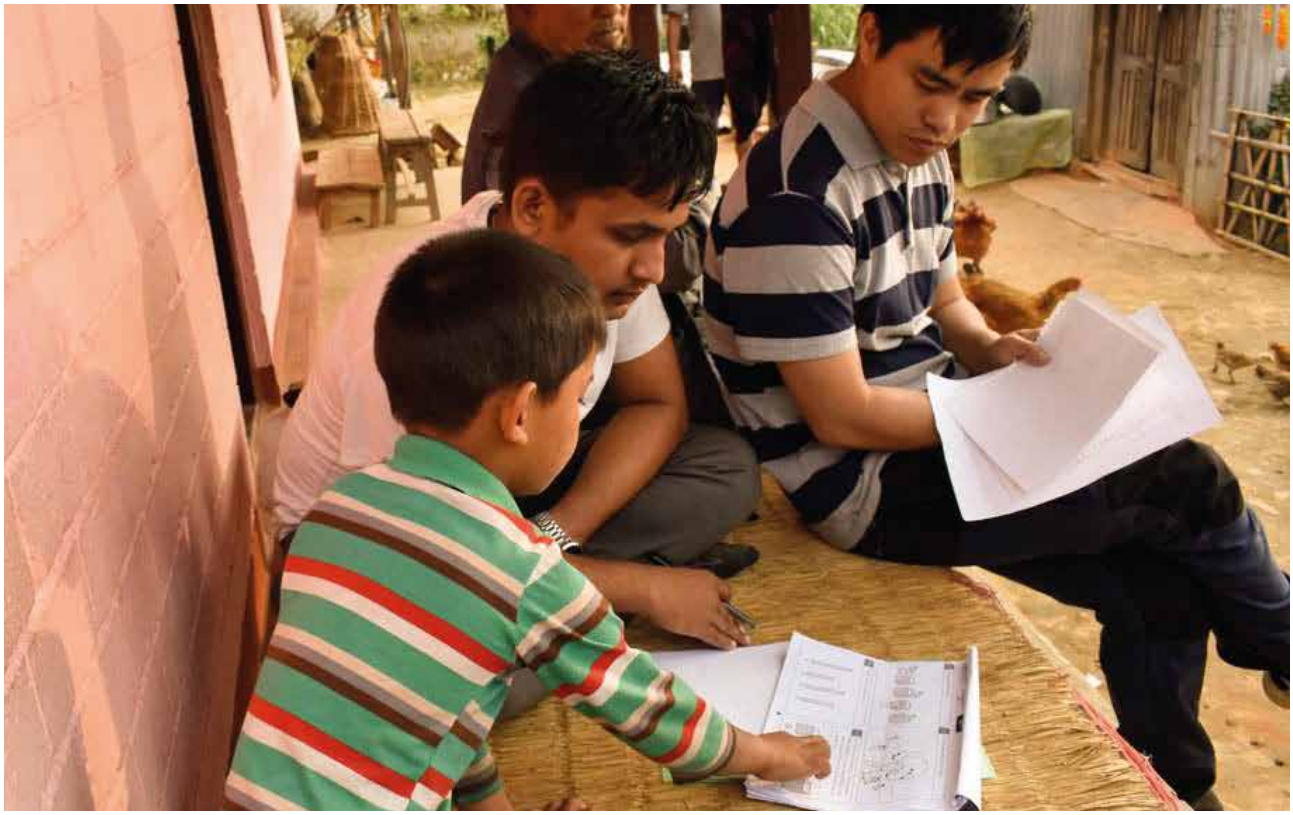


Figure 14: Proportion of students achieving Minimum Proficiency Levels at Grade 2 by grade group, district, and parental education status.



4. Conclusions

This report explores the changes of foundational numeracy learning outcomes since the first administration of ICAN assessment in 2019. We revisited the original rural communities sampled in 2019 to conduct the same assessment at the end of 2022 and the beginning of 2023, adhering to the initial sampling framework and assessment protocols.

Our findings indicate that most infrastructure characteristics in these communities have remained similar since the previous ICAN administration. However, there has been an increase in access to technological devices, such as mobile phones and computers, across all districts. School enrolment rates remain high and relatively unchanged from 2019 to 2023. Notably, certain educational practices within households have evolved. For instance, the proportion of children receiving private tuition has increased considerably in Toba Tek Singh (Pakistan), while the frequency of children bringing reading materials home has decreased substantially in all districts, except Betul (India).

Regarding learning outcomes, the data reveals divergent trends. In Jhenaidah (Bangladesh) and Betul (India), we observed a decline in foundational numeracy skills, especially among children in Grades 2-6. This decline was not as evident among older students in Grades 7-8, possibly because these students had already acquired these foundational skills before the pandemic disrupted schooling. Conversely, in Toba Tek Singh (Pakistan) and Makwanpur (Nepal), children's numeracy performance has shown improvement across various tasks and grades post-pandemic.

The observed trends appear to broadly corroborate the school closure policies implemented in the participating countries during Covid-19, as mentioned earlier in this report (details included in **Appendix C**). The two districts where learning outcomes are observed to have fallen during this period are those that had the longest school closures. This suggests a potential link between extended closures and diminished learning, prompting further examination in similar contexts.

It is also clear that the potentially pandemic-induced learning loss only represents a limited part of the learning deficit that exists in these locations. Our report demonstrates that the percentage of children reaching minimum proficiency at the Grade 2 or Grade 3 level is low even for those children enrolled in Grades 4-8, a trend observed even before the pandemic in 2019. Thus, the learning crisis predated COVID-19, although the pandemic may have aggravated it in some cases. Merely implementing learning recovery policies will not suffice to ensure that children in the Global South achieve foundational skills. Governments across the Global South need to aim for systematic change, aiming higher than just returning to the already inadequate pre-pandemic learning levels

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Appendix A: Mapping of ICAN Items to Global Proficiency Framework Descriptors

Item - GPF construct/subconstruct mapping					
Item	**Description**	Domain	Construct	Grade	Proficiency Level
Q1	**Cats in boxes**	Geometry	Position and Direction	2	PM (Partially meets)
Q2	**Children by tree**	Measurement	Length, Capacity, Volume	2	PM
Q3	**Length of pencil**	Measurement	Length, Capacity, Volume	2	PM
Q4	**Balls in boxes**	Measurement	Length, Capacity, Volume	3	M (Meets)
Q5	**Number of apples**	Statistics	Data Management	2	PM
Q6	**Comparing bananas and oranges**	Statistics	Data Management	2	M
Q7	**Clock with 2:00**	Measurement	Time	3	PM
Q8	**Clock with 7:30**	Measurement	Time	3	M
Q9	**Calendar with day**	Measurement	Time	2	M
Q10	**Calendar with date**	Measurement	Time	2	M
Q11	**Straight line**	Geometry	Shapes and Figures	2	M
Q12	**Triangle**	Geometry	Shapes and Figures	2	PM
Q13	**How many birds**	Number knowledge	Whole Numbers	2	PM
Q14	**Compare number of items**	Number knowledge	Whole Numbers	2	PM

Q15	**Recognize Number <10 (x5)**	Number knowledge	Whole Numbers	2	PM
Q16	**Two-digit Addition within 50 w/o regrouping**	Number knowledge	Operations	3	PM
Q17	**Two-digit Subtraction w/o regrouping**	Number knowledge	Operations	3	PM
Q18	**Single-digit multiplication w/i 25**	Number knowledge	Operations	3	PM
Q19	**Single-digit division w/i 25**	Number knowledge	Operations	3	PM
Q20	**Recognize Numbers <100 (x5)**	Number knowledge	Whole Numbers	2/3	M/PM
Q21	**Two-digit Addition with Re-grouping**	Number knowledge	Operations	3	M
Q22	**Two-digit Subtraction with Re-grouping**	Number knowledge	Operations	3	M
Q23	**Two-by-one digit Multiplication**	Number knowledge	Operations	5	PM
Q24	**Two-by-one digit Division w/a remainder**	Number knowledge	Operations	5	Exceeds
Q25	**Word problem with Subtraction w/regrouping**	Number knowledge	Real-world problems	3	M
Q26	**Word problem with Division**	Number knowledge	Real-world problems	4	M

Appendix B: Minimum Proficiency Levels (Alternative Measures and Differences)

In this Appendix we present various measures of overall performance in the ICAN assessment. Given that assessments can be evaluated through multiple lenses, we explored the following methodologies for this report:

- Minimum Proficiency Levels defined by Policy Linking.
- Minimum Proficiency Levels defined by mapping of items to grades according to the GPF.
- Minimum Proficiency levels defined for the ICAN 2019 report.
- Percentage of correct responses in the entire assessment.
- IRT-scaled scores.

Minimum Proficiency Levels defined by mapping of items to grades

Policy Linking is a method that allows for linking existing assessments to the Global Proficiency Framework (GPF) to measure progress towards Sustainable Development Goal 4.1.1, the proportion of children who achieve at least a minimum proficiency in reading and mathematics. The goal is defined for three different stages in the schooling trajectory, and we are mainly interested in the performance of children at the end of lower primary school (SDG 4.1.1(a)). Policy Linking involves 15 to 20 panellists, including teachers and curriculum experts, who evaluate how well an assessment aligns with the GPF. They match assessment items to relevant GPF descriptors and set benchmarks representing the minimum proficiency standards children must meet.

In this report, we focus on a Policy Linking exercise conducted virtually with participants from Kenya and Nigeria. This means that the thresholds that were set are most relevant for these two countries and might differ if the exercise was conducted in other countries, as the ones we have in this report. However, we believe that even if there might be differences, they should not impact the overall interpretations. Although we unfortunately do not count with thresholds defined for other countries, these thresholds also represent the most rigorous benchmark exercise that we have.

The Policy Linking exercise determined that ICAN was “Additionally Aligned” to the GPF (the second highest category of alignment) and established two benchmarks: MPL for grade 2 (17 correct responses) and MPL for grade 3 (21 correct responses). These are the cut scores that we use in this report.

Another potential method for establishing the MPL involves utilizing the mapping of items to GPF descriptors. This mapping was done as part of the Policy Linking exercise outlined in the preceding section. An alternative strategy for setting the benchmark entails specifying that a child has attained minimum proficiency for a particular grade if the child correctly answers a designated percentage of relevant questions. In this appendix, we detail how the thresholds are determined by proposing that to achieve the MPL, a child has to answer correctly all the questions relevant to a specific grade.

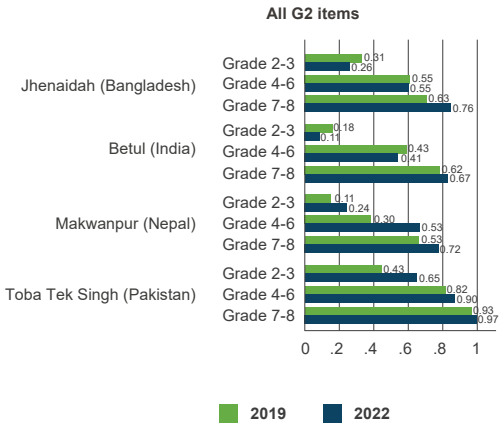

Figure B1. Proportion of students achieving Minimum Proficiency Levels at Grade 2 defined by responding all grade 2-level questions correct by grade group and district.

Minimum Proficiency levels defined for the ICAN 2019 report

For the ICAN 2019 report, we created a specific threshold for reporting. At the time of writing this report, the latest version of the Global Proficiency Framework had not been released, and we had not yet conducted the Policy Linking exercise described above (so we did not have the mapping of the ICAN items to the GPF descriptors). In this scenario, we created a specific threshold that proxied the definition of minimum proficiency requirements for SDG4.1.1(a): students should demonstrate skills in number sense and computation, shape recognition, and spatial orientation in class 2 or 3. Our operationalization of those requirements was that to be considered proficient children had to answer correctly at least 1 question of spatial orientation, shape recognition, measurement, and number recognition; as well as at least 3 simple number operations.

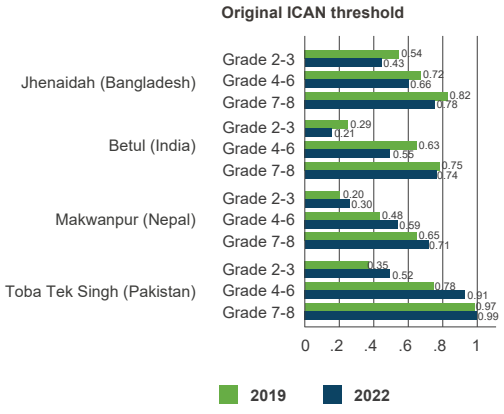

Figure B2. Proportion of students achieving Minimum Proficiency Levels at Grade 2 defined by criteria established for ICAN 2019 report by grade group and district.

Percentage of correct responses in the entire assessment

Another common way of summarizing performance in an assessment is the percentage of correct responses over the total number of items in the assessment. As understandable as this statistic may be, it is also problematic as it does not imply anything about whether the performance of a child or a district average is satisfactory. In our case, the assessment administered in 2019 is the same as the one administered in 2022, so the percentage-correct indicator can be used to compare performance across administrations.

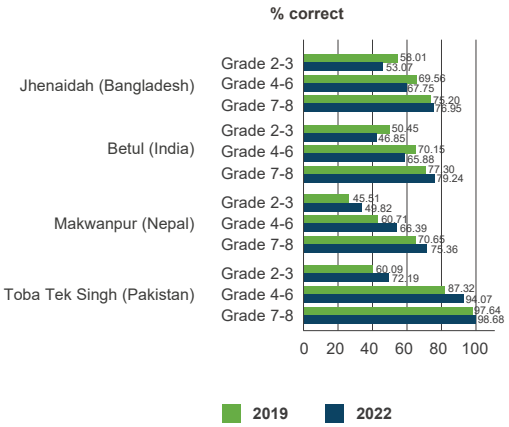

Figure B3. Percentage of correct responses to the ICAN items by grade group and district.

IRT-scaled scores

Modern assessments make use of Item Response Theory (IRT) to analyze both item and test-taker performance. IRT is a family of statistical models that try to model the relation between some latent unobservable characteristic, trait, or attribute and the answers to specific items in an instrument. In this case, we try to model the relation between the ability of children in foundational mathematics and the responses to the ICAN items.

For this report, we fitted a 1-parameter logistic model (also known as the Rasch model) concurrently for the responses to the items in 2019 and 2022 in the four districts that are part of the study.

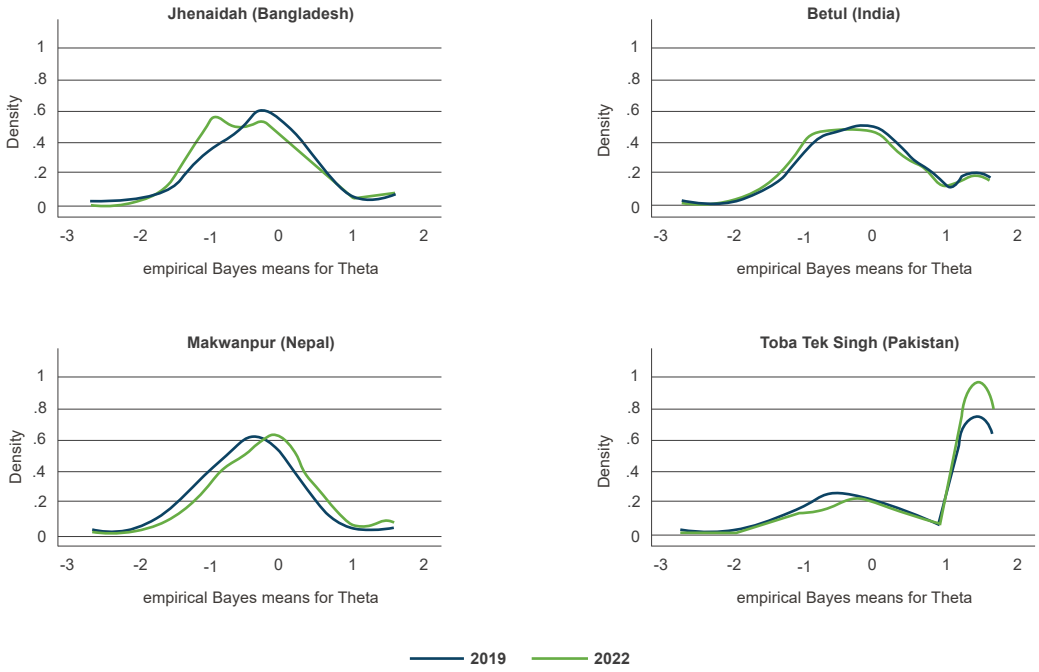

Figure B4. Distribution of IRT-scaled scores by district in 2019 and 2022.

Appendix C: Notes on School Closures

Bangladesh

During the COVID-19 pandemic, the Bangladeshi government took significant steps to curb the virus's spread, including one of the world's longest pandemic-related closures of educational institutions. This measure, aimed at safeguarding students' and educators' health, affected approximately 37 million children[5].

The educational shutdown began on March 17, 2020, following an advisory from the Ministry of Education[6], encompassing all the country's educational institutions. Schools and colleges began a phased reopening on September 12, 2021[7], but faced another full closure from January 21 to February 6, 2022, due to a spike in COVID-19 cases[8]. On February 22, 2022, in-person classes resumed for vaccinated students, as Education Minister Dipu Moni announced[9].

To counter the educational disruption, the government launched the COVID-19 School Sector Response (CSSR) Project with the support of the Global Partnership for Education and the World Bank. This initiative aimed to bolster the educational system's resilience, offering distance learning for 3.26 million students, creating 5,000 digital content pieces, and training 950 teachers for online instruction. Additionally, it enhanced teacher well-being and hygiene facilities in over 19,500 remote government primary schools, seeing a 90 percent student return rate post-pandemic disruptions[10].

The government introduced online classes and "Ghore Boshe Shikhi" (Learning from Home) for structured virtual learning, broadcasting educational content on Sangsad Television and Bangladesh Betar to extend reach[11]. In collaboration with UNICEF and others, the government distributed printed learning materials to students in remote areas.

However, a World Bank study by Rahman & Sharma in 2021 highlighted significant disparities in access to these educational resources[12]. Less than half of the children aged 5-15 had access to radios, computers, and televisions, and despite widespread mobile phone access, internet connectivity was scarce. The digital divide was stark between rich and poor households, with only 9.2 percent of the poorest having television access versus 91 percent of the wealthiest. Additionally, only 2 percent of households with access utilized online learning programs[13].

In summary, Bangladesh's educational response to the pandemic demonstrated resilience and innovation through projects like CSSR and remote learning initiatives. Nonetheless, the persisting digital divide and access inequality to educational resources underscore the need for further efforts to ensure equitable learning opportunities during crises.

[5] *COVID-19: Scale of education loss 'nearly insurmountable', warns UNICEF. https://www.unicef.org/bangladesh/en/press-releases/covid-19-scale-education-loss-nearly-insurmountable-warns-unicef#:~:text=In%20 Bangladesh%2C%2037%20million%20children,world's%20longest%20pandemic%20school%20closures*

[6] *Govt orders closure of all educational institutions from March 17. TBS News. https://www.tbsnews.net/bangladesh/education/govt-orders-closure-all-educational-institutions-march-17-56947*

[7] *All schools, colleges to reopen Sept 12. https://www.thedailystar.net/news/bangladesh/education/news/all-schools-colleges-reopen-sept-12-3183434*

[8] *Schools, colleges to remain closed from Jan 21 to Feb 6 as Covid infections rise: Cabinet. TBS News. https://www.tbsnews.net/bangladesh/education/schools-colleges-remain-closed-21-jan-6-feb-covid-infections-rise-cabinet*

[9] *Reimagining post-COVID primary education. The Daily Star. https://www.thedailystar.net/opinion/news/reimagining-post-covid-primary-education-2097497*

[10] *How Schools in Bangladesh Emerged as More Resilient After the COVID-19 Pandemic. https://www.worldbank.org/en/news/feature/2023/06/09/how-schools-in-bangladesh-emerged-as-more-resilient-after-the-covid-19-pandemic*

[11] *Reimagining post-COVID primary education. The Daily Star. https://www.thedailystar.net/opinion/news/reimagining-post-covid-primary-education-2097497*

[12] *A Simulation of COVID-19 School Closure Impact on Student Learning in Bangladesh. World Bank. https://openknowledge.worldbank.org/entities/publication/cc9b7ccc-9c69-5446-976a-a95bc53408e8*

[13] *Combating the Impact of COVID-19 School Closures in Bangladesh. https://blogs.worldbank.org/endpovertyinsouthasia/combatting-impact-covid-19-school-closures-bangladesh#:~:text=To%20help%20students%20deal%20with,have%20access%20to%20these%20resources*

India

School closures in India began as early as March 2020 and gradually reopened around 18 months later in September-October 2021. Madhya Pradesh, like many other regions globally, faced significant disruptions in its education system due to the COVID-19 pandemic. The government of Madhya Pradesh took measures to curb the virus's spread, resulting in the closure of educational institutions. These closures had far-reaching impacts on students, teachers, and the overall education landscape. During the lockdown period, schools were forced to shut down, prompting a shift to online teaching and learning.

The abrupt closure of schools led to a disruption in the academic calendar. Many students lacked access to suitable digital devices and the internet, hindering their ability to continue learning remotely. The existing digital divide became more pronounced during this time, with economically disadvantaged students facing greater challenges in accessing online education, exacerbating the education gap between privileged and underprivileged students.

In response to the challenges posed by school closures, the government of Madhya Pradesh implemented several initiatives through digital and non-digital programmes under the campaign #ab padhai nahi rukegi (#Learning will not stop):

- Online Learning Platforms: The government promoted the use of online learning platforms to continue educational activities, making efforts to provide students and teachers with access to digital resources and e-learning materials. The digital learning component, the “Digital Learning Enhancement Programme” (DigiLEP) shares curated learning material for all grades through WhatsApp groups. In addition to WhatsApp, the material was also uploaded on the DIKSHA platform, where lessons are packaged into courses and sent out to teachers with clear targets and deadlines.
- TV and Radio Broadcasts: In areas with limited internet access, educational content was broadcast through television and radio to ensure wider availability.
- Teacher Training: Special training programs were conducted to equip teachers with the necessary skills to effectively conduct online classes. The CM RISE digital teacher training programme was launched to support online teacher professional development.
- Reopening Plans: As the COVID-19 situation improved, the government devised phased reopening plans for schools, prioritizing the safety of students and staff.

Apart from this, The TopParent App was also launched to help parents monitor primary school students’ learning.

The closure of schools in Madhya Pradesh and worldwide during the COVID-19 pandemic posed unprecedented challenges for the education sector. It underscored the need for comprehensive strategies to ensure continuous learning during emergencies. The experience provided valuable lessons on the importance of bridging the digital divide and enhancing the resilience of the education system in the face of future disruptions.

School reopening status in madhya Pradesh during Covid-19 pandemic

S No.	Year	School Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2020	Primary School(G1 to G5)												
2		Middle School(G6 to G8)												
3		Secondary School(G9 to G10)			Can only go to schools for doubt sessions									
1	2021	Primary School(G1 to G5)												
2		Middle School(G6 to G8)												
3		Secondary School(G9 to G10)												
1	2022	Primary School(G1 to G5)												
2		Middle School(G6 to G8)												
3		Secondary School(G9 to G10)												

Full Closure

Partial Closure (Once a week with 50% capacity)

School reopened (with 50% capacity)

School reopened completely

School closure guidelines during COVID-19 in the "Year 2020-21"

S No.	School Type	What was happening during school closure?
1	Primary School (G1 to G5)	**Full Closure: (March 2020 - August 2021):** ◑ During this time, conventional learning materials were distributed, alongside education content disseminated through television and non-digital platforms, encompassing school lessons broadcasted via radio. ◑ Furthermore, the "Digital Learning Enhancement Programme" (DigiLEP) facilitated the dissemination of tailored learning resources for all grade levels via WhatsApp groups. ◑ The initiation of the CM RISE digital teacher training programme aimed to provide assistance for online teacher professional development ◑ Additionally, the TopParent App was introduced to aid parents in monitoring the learning progress of primary school students. ◑ Lastly, the TicTacLearn video library played a pivotal role in this period.
2	Middle Schoo (G6 to G8)	
3	Secondary School (G9 to G10)	**Full Closure: (March 2020 - June 2021):** ◑ Schools reopened for classes 9th and 10th in December. The decision to reopen schools for class 10 students was taken keeping in view of the board examinations. ◑ The regular classes was commenced for classes 10th but it has been left to the school principals and headmasters to decide when and how to resume regular classes for class 9th 'depending on space' and enrolment.

School closure guidelines during COVID-19 in the "Year 2021-22"		
S No.	**School Type**	**What was happening during school closure?**
4	Primary School (G1 to G5)	**Partial Closure: (September 2021 - March 2022):** Classes will open with 50% attendance following the Covid-19 protocol Online classes will be conducted on other days except the days which are determined for each classes As usual, sharing of materials through whatsapp and television will be continued
5	Middle Schoo (G6 to G8)	**Partial Closure: (September 2021 - March 2022):** Residential and non-residential school will open with 50% attendance, Students can come to schools with their parents/guardian's permission. Online classes will be conducted on other days except the days which are determined for each classes. As usual, sharing of materials through whatsapp and television will be continued.
6	Secondary School (G9 to G10)	**Partial Closure: (August 2021 - March 2022):** Residential and non-residential school with class 9th and 10th opened with 50% attendance in August once a week and from September it was opened all days with 50% attendance. Online classes will be conducted on other days except the days which are determined for each classes. As usual, sharing of materials through whatsapp and television will be continued

Nepal

The pandemic of COVID-19 had detrimental impact on Nepal's school education, and in Makwanpur district where ICAN 2022-23 was conducted. In response to the COVID 19 pandemic, governments around the world have enforced various measures to increase social distancing and flatten the curve. These measures - lockdown, extended holidays, and limited movement - have resulted in the closing of schools in 181 countries[14]. The first case of COVID-19 in Nepal was confirmed on 23rd January 2020, on a Nepali man returning from the Wuhan[15]. Subsequently, the official border crossing from China-Nepal remained closed since 21 January 2020[16]. A nation-wide lockdown of public movement and services was initiated by the Government since 24th March 2020[17]. In line with this, the Ministry of Education, Science and Technology (MOEST) was forced to shut-down schools and schools remained closed for almost eight months until the end of October 2020[18]. Due to surge in COVID-19 cases as a result of the emerge of the Delta variant, schools were re-closed in April 2021, only to re-open gradually in September that year. Another surge in cases a result of the Omicron variant caused schools to close yet again for a month at the beginning of 2022. Altogether schools remained closed for 14 months in Makwanpur district in 2020-2022 period.

To reduce the effect of the disruptions of services, the Ministry of Education, Science and Technology (MOEST) approved the national School reopening Framework in November 2020, providing guidance for local governments and schools on the safe reopening of their schools and also ensuring the alternative teaching and learning activities during school-closures. Furthermore, there were stark differences in the extent to which children had access to alternative education programs and resources to continue their learning during school closures, causing learning loss to be distributed unevenly across Nepal's student population.

A report published in 2019 by the Education Review Office (ERO) [as part of the Ministry of Education, Science and Technology (MOEST)] indicating that only 28 percent and 45 percent of students demonstrated adequate proficiency in Mathematics and Nepali language, in grade 5 and 3 respectively[19]. Another report from Education Review Office (ERO) 2018 shows only 8.41% of students in Grade 3 could meet the grade-level reading proficiency as defined by Ministry of Education[20]. These numbers confirm both that prior to the COVID-19 related disruptions, there was significant learning loss occurring in the system.

The following major points were reported by our ICAN volunteers from Makwanpur district:

- Makwanpur is one of the districts which is frequently reported of temporary school closures caused by frequent floods and landslides in monsoon season. Therefore, although unprecedented in its duration and impact, the school closures caused by the COVID-19 pandemic were not unique in terms of disruptions in the Nepal education system.
- In the rural areas of Makwanpur districts, the lower secondary (Grades 6-8) and secondary level (9-12 Grades) schools are a bit far and children must walk for few hours in some locations. During the school closures time, children got chance to stay home and play with their colleagues. When elder children got chance to play more with younger child, it helped them to interact about the foundational literacy.

[14] UNESCO. (April 4, 2020). Monitoring School Closing due to COVID. https://en.unesco.org/covid19/ educationresponse
[15] https://www.who.int/docs/default-source/nepal-documents/novel-coronavirus/health-sector-emergency-response-plan-covid-19-endorsed-may-2020.pdf?sfvrsn=ef831f44_2
[16] https://www.who.int/docs/default-source/nepal-documents/novel-coronavirus/covid-19-nepal-preparedness-and-response-plan-(nprp)-draft-april-9.pdf?sfvrsn=808a970a_2
[17] https://kathmandupost.com/national/2020/03/23/nepal-goes-under-lockdown-for-a-week-starting-6am-tuesday
[18] https://planipolis.iiep.unesco.org/sites/default/files/ressources/nepal_real_plan_2023-2028.pdf
[19] GON. 2019. National Assessment of Student Achievement, 2018: Main Report. Ministry of Education, Science and Technology, Education Review Office, Sanothimi, Bhaktapur.
[20] GoN. 2020. National Assessment of Reading and Numeracy in Grade 3. Ministry of Education, Science and Technology, Education Review Office, Sanothimi, Bhaktapur.

- District level education stakeholders in collaboration with media people and some leading schools, started low-tech learning support program through local radio and TV stations. The radio and TVs aired teaching learning related sessions from 4-8 hours a day for 2.5 years.
- Some schools reported to start that mobile learning camps where teachers in a group schedule visit to villages in their catchment area. Teachers used to go to house to house and meet children at least once a week. They used to check homework assignments and give new tasks for upcoming weeks.
- In Makwanpur, few schools started phone-based learning support program. Teachers are assigned with certain numbers of students each. Teachers used to call the parents and arrange conversation with students. They used to have conversations around what they read that day and what activities they needed to do.

  Few schools in urban and semi-urban areas in Makwanpur also conducted classes through online platforms such as Zoom and Google
- Classroom.

Pakistan

In the aftermath of COVID-19, the school system in Pakistan suffered a series of closures starting on 13th March, 2020, followed by another wave from 24th November, 2020; impacting 46 million learners of ages 5-16 years, adding up to approximately 8 months of learning disruption affecting 40 million school going children of pre-primary to higher secondary education level. However, the school closures in Pakistan were less frequent and shorter in duration as compared to other countries in the region. Following initiatives were launched by the government to prevent learning loss due to disruption in schooling:

- Govt of Punjab attempted to ensure continuity of learning through digital and online solutions "TeleGhar" as a television-based learning program through local cable channels in districts.
- SED also collaborated with Microsoft to train its teachers/headteachers (around 400,000) on using online tools for professional development, with certification and licenses by the Summer of 2020.
- Pakistan's Ministry of Federal Education and Professional Training (MoFE&PT) at the federal level introduced Tele-school as a full-fledged day long (8am to 6pm) TV program to ensure educational/learning opportunities for grades K to 12 to support remote learning. Pakistan Television Corporation (PTV). The program was 1 hour long for each grade. According to ICAN report, the usage of television increased from 71% in 2019 to 90% 2022
- By November 2020, radio school was launched by MoFE&PT to provide educational classes for students who do not have access to TV especially in northern areas.
- The government was actively providing learning options during COVID-19 including tracking students'/parents' phone/WhatsApp numbers for conveying essential COVID safety messages and homework/learning content.
- The school education departments also invested in printed learning packs by grade for continuity of learning to ensure support for students' unable to access digital solutions.
- When schools reopened, government created Health & Hygiene SOPs to implement in schools, such as distribution of soaps and sanitizers, wearing face mask, setting up WASH stations and social distancing etc.

Moreover, according to the ICAN report (2023), a greater share of students availed private tuition after COVID set in; 68% in 2022 as compared to 49% in 2019. Hence, COVID related learning loss is not reflected in ICAN assessment results for Toba Tek Singh, Pakistan.

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