www.fsg.org/pipe pipe@fsg.org

FSG REIMAGINING SOCIAL CHANGE

Assessment of Child Development Outcomes (July-Sept. 2016)

PROGRAM TO IMPROVE PRIVATE EARLY EDUCATION (PIPE)

Glossary of terms (1/2)

- **Affordable Private Schools (APSs):** Schools that charge fees up to INR 28,500 per annum, and typically provide education up to grade 10
- **Early Childhood Education (ECE):** The formal education a child receives between the ages two through five. Typically early childhood is considered to range from birth to age six, this narrower definition has been chosen to reflect the research's interest in the years when formal pre-primary education is typically provided in India
- **English-medium education:** Education where the language of instruction is English
- **Markers:** Indicators or signs that parents use to assess whether their child is learning
  - **Markers to test recall:** Questions used by parents to assess their children for content memorized using rote methods (e.g., asking the child to recite numbers)
  - **Markers to test concepts:** Questions used by parents to assess their children's conceptual understanding of any topic (e.g., asking the child to count items)
- **Preschooling/ Pre-primary classes:** All formal educational classes prior to first grade
- **Program to Improve Private Early Education (PIPE):** Program that aims to replace rote with activity based learning in all 300,000 APSs in India
- **Activity based learning (ABL):** Learning through structured play-based activities, games, and experiences that provide developmental benefits across the cognitive, physical, and socio-emotional domains
- **ABL solution provider:** Private companies providing ABL solutions including curriculum materials, teacher training and continuous support for proper implementation of the program
- **Partner:** Private companies that have partnered with PIPE and provide high-quality ABL solutions to APSs
- **Partner solutions:** Play/ activity based programs including curriculum materials and continuous support for proper implementation of the program, provided by PIPE partners

Glossary of terms (2/2)

- **PIPE teachers:** Teachers teaching in APSs served by PIPE partners
- **STARS:** Scoring Tool for Assessing Readiness at School to assess the impact of ABL in APSs
- **PIPE APSs:** APSs using PIPE partner solutions
- **Control APSs:** APSs using no external interventions
- **Full curriculum PIPE APSs:** PIPE APSs using full school curriculum
- **Single subject PIPE APSs:** PIPE APSs using single subject curriculum
- **1 year PIPE APSs:** APSs with partner solutions for 1 year
- **2 year PIPE APSs:** APSs with partner solutions for 2 years
- **3 year PIPE APSs:** APSs with partner solutions for 3 year
- **4 year PIPE APSs:** APSs with partner solutions for 4 years

Contents

PIPE had two major objectives in assessing children entering Grade 1 and Upper Kindergarten (UKG)

1. Assess **baseline learning outcomes** for children **entering UKG and Grade 1** in PIPE-partner APSs

2. Understand **level of learning outcomes for** children entering **UKG and Grade 1** in **Government-run** and **higher-priced private schools**

Approach to planning and conducting assessments

Select tool

- Developed criteria to assess potential tools
- Engaged with 10[1] experts to advise on process
- Modified criteria with expert inputs
- Selected the IDELA[2] tool for assessing child development outcomes by assessing 4 shortlisted tools against selection criteria and through expert inputs

Adapt tool

- Field-tested IDELA to identify gaps in coverage and administration
- Created an addendum of 8 items to the IDELA with expert inputs
- Pilot tested the addenda
- Finalized modifications with expert inputs
- Translated adapted tool into local languages

Plan assessments

- Determined sample composition (4 cities, 2 grades – Upper KG and Grade 1, equal representation of both grades and genders in the sample)
- Finalized target sample size (480 children – 402 from PIPE partner APSs and 78 from government and higher-priced private schools)

Conduct assessments

- Selected assessment agency
- Trained 13 evaluators on administering the tool
- Conducted assessments

Process findings and publish report

- Cleaned and analyzed data
- Published findings

Notes: [1]Experts consulted include Abbie Raikes, Venita Kaul, Nandita Jhaveri, Aisha Yousafzai, Nirmala Rao, Amanda Devercelli, Amber Gove, Jayanti Tambe, MS Tara, Vibha Krishnamurthy; [2]International Development and Early Learning Assessment; Please see Appendix 2 for more details on the approach, tools considered and selection criteria

Experts consulted for selecting and adapting assessment tool

Name	Designation and Organization
Abbie Raikes	Assistant Professor and Director of Global Early Childhood Development, University of Nebraska; Former Lead, Measuring Early Learning Quality & Outcomes project, United Nations Children's Fund (UNICEF)
Venita Kaul	Former Director, Centre for Early Childhood Education and Development (CECED), Ambedkar University, Delhi
Nandita Jhaveri	Independent education consultant; Former Principal, Saifee School, Mumbai
Aisha Yousafzai	Associate Professor of Global Health, Harvard T. H. Chan School of Public Health, Harvard University
Nirmala Rao	Professor, Early Childhood Education and Development, Hong Kong University
Amanda Devercelli	Acting Global Lead, Early Childhood Development, World Bank
Amber Gove	Director, Research, RTI International
Jayanti Tambe	Executive Director, Early Care and Education, University of California, Los Angeles
MS Tara	Independent education consultant; Former Regional Director, National Institute of Public Cooperation and Child Development
Vibha Krishnamurthy	Founder & Executive Director, Ummeed Child Development Center

The research is based on assessment of 480 children entering UKG and Grade 1 in 4 cities

School type	UKG					Grade 1					Grand Total
	Bangalore	Delhi	Hyderabad	Mumbai	**Total**	Bangalore	Delhi	Hyderabad	Mumbai	**Total**	
APS	59	24	55	57	**195**	63	22	56	66	**207**	402
Government-run schools	-	-	13	-	**13**	11	4	19	7	**41**	54
Higher-priced private schools	12	-	-	6	**18**	1	-	-	5	**6**	24
Grand Total	71	24	68	63	226	75	26	75	78	254	**480**

School type	UKG			Grade 1			Grand Total
	Male	Female	**Total**	Male	Female	**Total**	
APS	91	104	**195**	102	105	**207**	402
Government-run schools	-	13	**13**	17	24	**41**	54
Higher-priced private schools	14	4	**18**	4	2	**6**	24
Grand Total	105	121	226	123	131	254	**480**

Mean age (APS sample): UKG: 5.07 years | Grade 1: 5.83 years (Age data for most government school children was not available)

Notes: To highlight the gap in school readiness for Indian students entering grade 1, findings from UKG have not been included in this document.
Due to the small sample size of higher-priced private schools, their findings have not been included in this document.

Contents

At the time of entering Grade 1, a child (aged 5 or more) needs to have a minimum set of basic skills in order to succeed

Not an exhaustive list

Numeracy and problem-solving skills

- Count from 1 to 20
- Add and subtract two single-digit numbers
- Compare quantities and numbers
- Identify shapes and colors
- Recognize, create and describe patterns

Early language skills

- Hear and say initial sounds in words
- Begin to read simple words and sentences
- Retell simple past events in sequence
- Write simple words and own name

Socio-emotional skills

- Be aware of own feelings
- Show empathy
- Negotiate and solve problems
- Take turns while playing and share toys etc., with others

Gross and fine motor skills

- Use balancing and climbing equipment confidently
- Comfortably handle tools, objects and malleable materials
- Copy simple shapes
- Hold a pencil and use it to form recognizable letters
- Draw a person

Executive function[1]

(Mental processes that enable us to plan, focus attention, remember instructions, and juggle multiple tasks successfully)

- Follow 2-3 step directions
- Demonstrate control over impulsive actions

Notes: [1]Executive Function spans across the other set of developmental skills and hence it is represented horizontally, covering the other domains

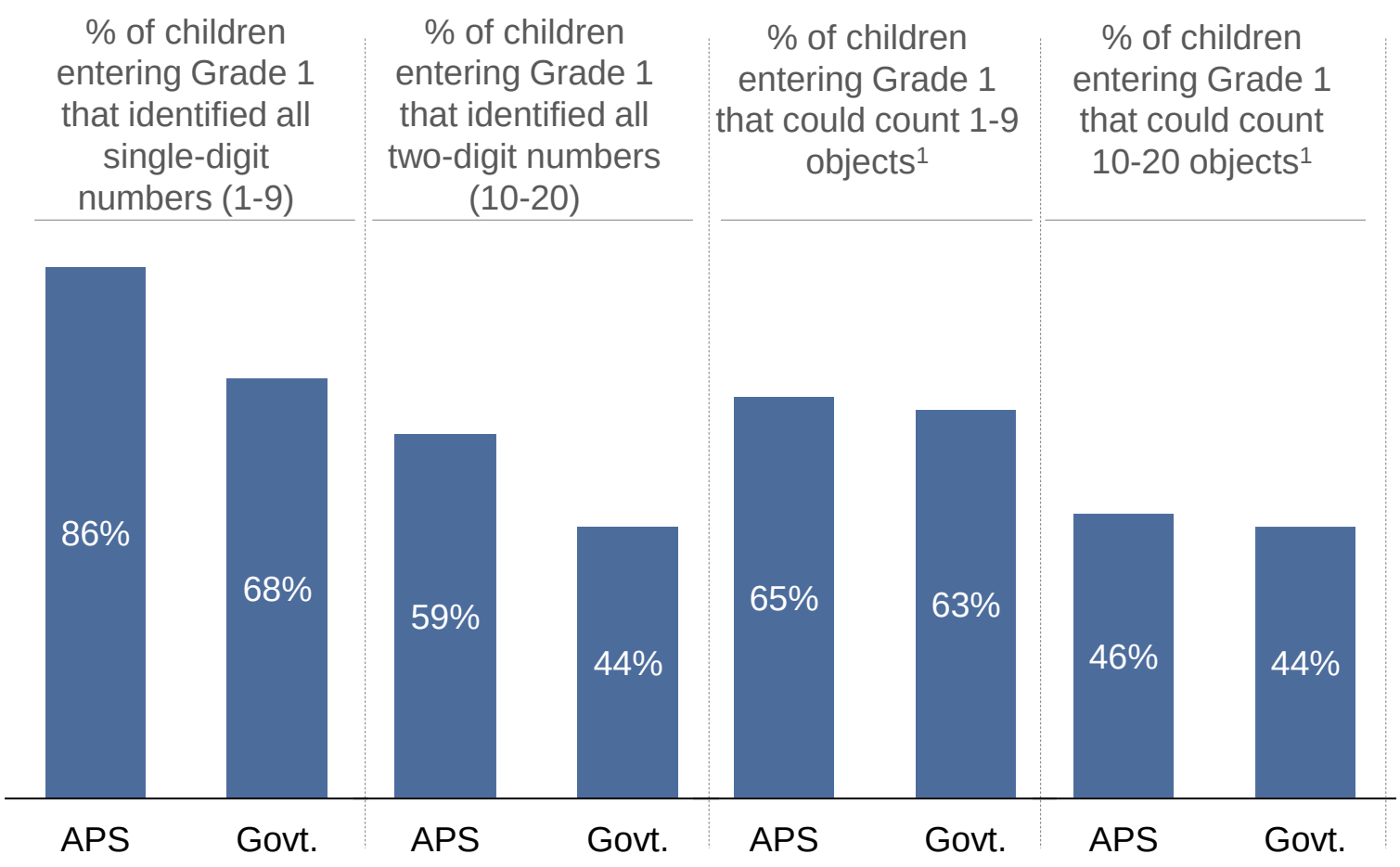
Sources: "Executive Function and School Readiness" – National Association of Child Care Resource & Referral Agencies; "Statutory framework for the early years foundation stage", Department for Education, Government of the UK; Ages and Stages Questionnaire for 57-66 month olds (pg. 152-159); "Executive Function & Self-Regulation" – Centre on the Developing Child, Harvard University

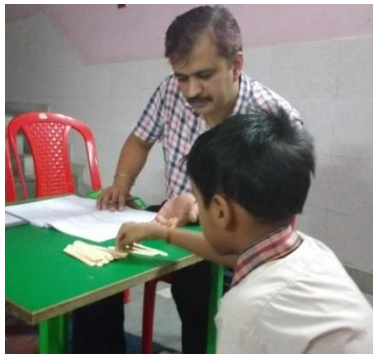
Assessment of 248 children, revealed that a large proportion of children entering Grade 1 in APSs are not school-ready

*Of the children **entering Grade 1 in APSs…***

Numeracy and problem-solving skills	1	41% could not identify all numbers up to 20
	2	54% could not give correct number of objects corresponding to numbers from 10-20 (e.g., handing over 13 beans from a pile)
	3	33% could not compare single-digit numbers
	4	48% could not identify a circular shape in their environment
	5	82% could not complete a simple, 4-piece puzzle
Early language skills	6	28% could not identify the 20 most common letters of the English alphabet
	7	76% could not match three simple words to their initial sounds
	8	78% could not read three simple three-letter English words
	9	68% could not name 8 or more animals or items bough at a market (e.g., biscuit)
	10	96% could not frame simple 3-word sentences in English
Socio-emotional skills	11	57% could not share a potential cause for a negative emotion (e.g., sadness)
	12	64% could not suggest two approaches to dealing with sadness
Motor skills	13	26% could not hop on a single leg 8 or more times
	14	20% could not use a pencil and write their name correctly
Executive function	15	79% could not reverse a sequence of three numbers – an indicator of poor working memory

41% children entering Grade 1 in APSs could not identify numbers till 20 and 54% did not understand concept of number double digit values





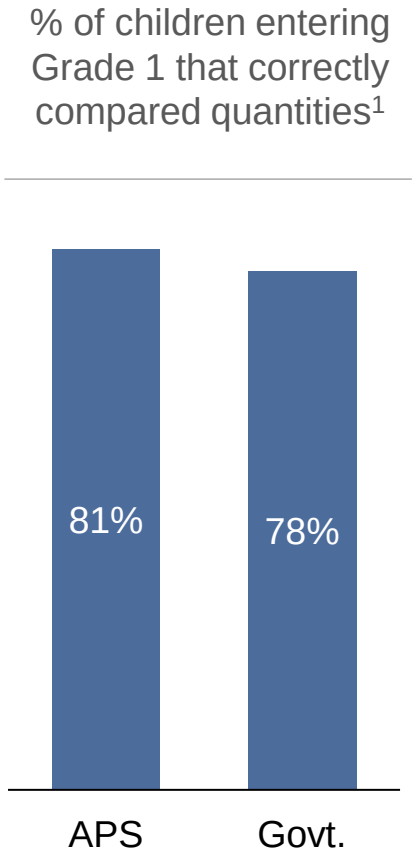
Children being administered questions on understanding of numerical concepts

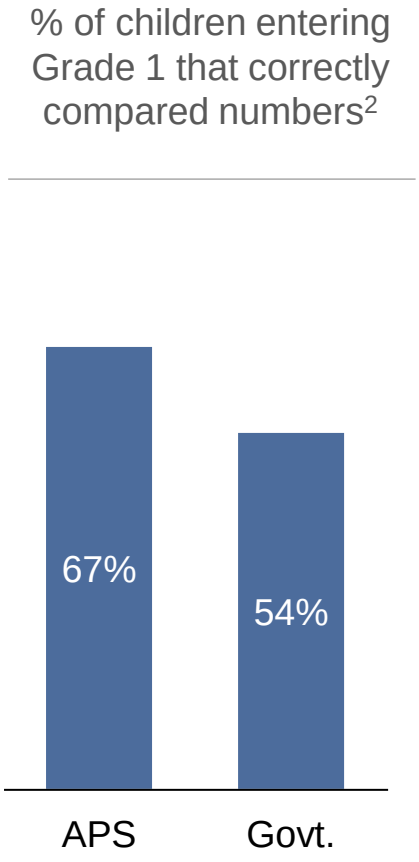
APS n= 207 Government n= 41

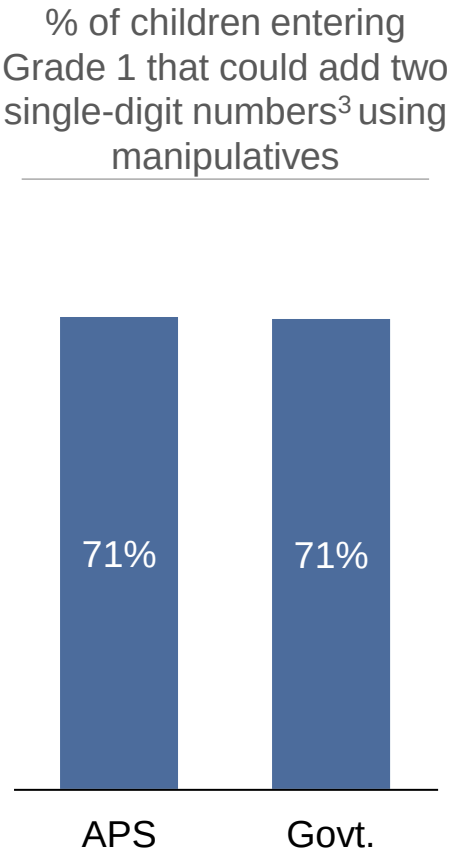
Notes: [1]The counting exercises involved children being asked to count a certain number of objects (e.g., "could you give me 7 sticks?"); Mean age for APS Grade 1 sample: 5.83 years. Age data for many government school children was not available

Sources: Photos - FSG

3 33% children entering Grade 1 in APSs and 46% in government schools could not compare single-digit numbers







Children being administered questions on addition

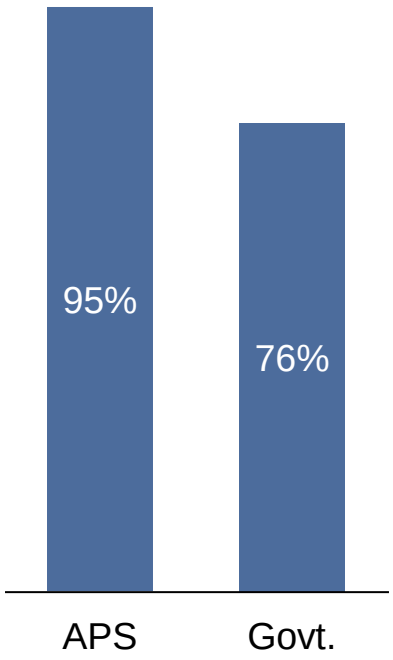
APS n= 207 Government n= 41

Notes: [1]Children were shown two sets of pictures and for each set, asked to identify which picture (out of a pair) had more objects; [2]Children were shown two single-digit numbers and asked to point to the one that was greater; [3]Children were shown objects and asked to total them. The addition did not involve any carryover; Mean age for APS Grade 1 sample: 5.83 years. Age data for many government school children was not available;

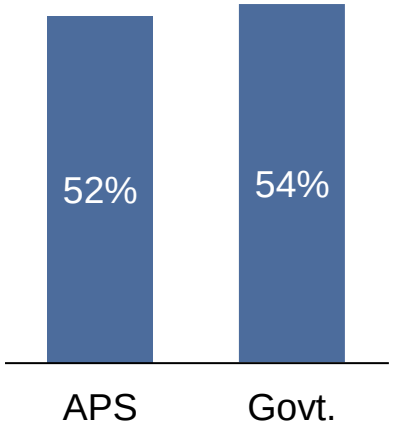
Sources: Photos - FSG

4 48% children entering Grade 1 could not identify a circular shape in their environment

% of children entering Grade 1 that correctly identified a circle on paper



% of children entering Grade 1 that correctly identified a circular object in the environment



APS n= 207 Government n= 41

Assessor:

- *"Could you point to something shaped like a circle around us?"*

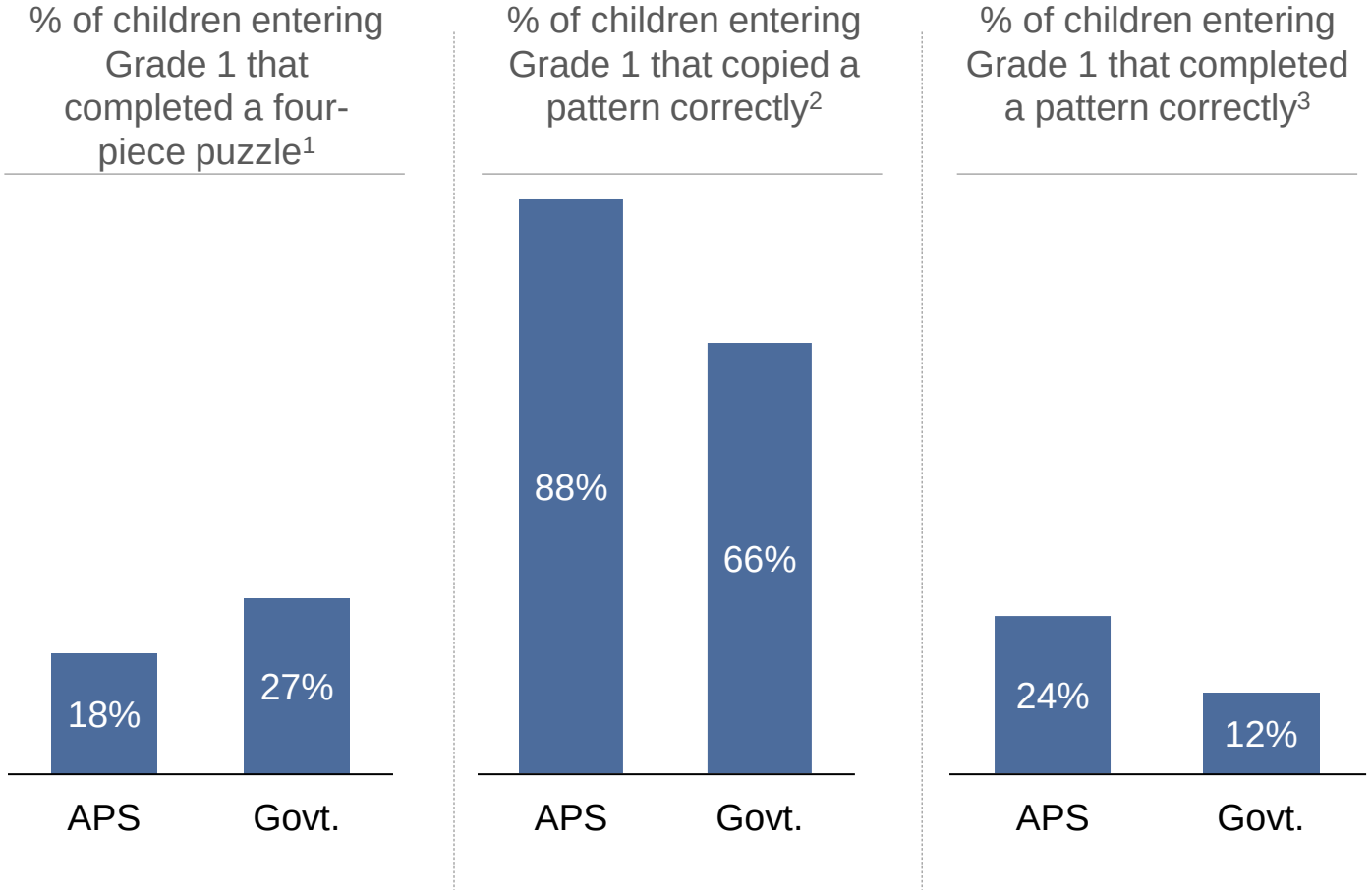
Some responses:

- Child stayed silent
- Child looked around but could not identify any circular object
- Child pointed to objects that were not circular
- Child pointed to circular wall clock

Some responses from children when asked to identify a circular shape in the environment

Notes: Mean age for APS Grade 1 sample: 5.83 years. Age data for many government school children was not available;

5 82% children entering grade 1 in APSs and 73% in government schools could not complete a 4 piece puzzle



Children being administered questions on patterns and puzzles

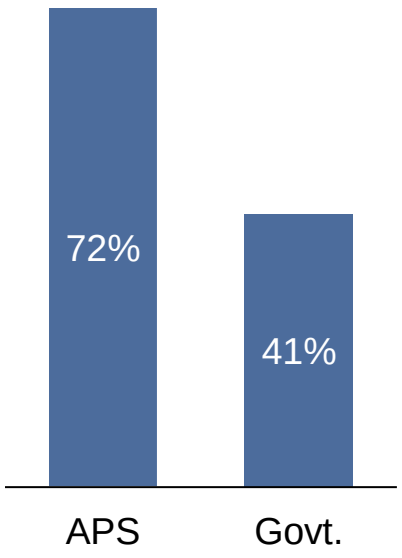
APS n= 207 Government n= 41

Notes: [1]Children were given a picture cut into four equal-sized rectangles, and asked to arrange the pieces correctly. They were also provided with a reference picture while attempting this task; [2]Children were given a pattern made up of simple shapes and asked to create the same pattern using cutouts of the shapes; [3]Children were shown an incomplete pattern with a set of repeating shapes and asked to complete it using cutouts of the shapes; Mean age for APS Grade 1 sample: 5.83 years. Age data for many govt. school children was not available

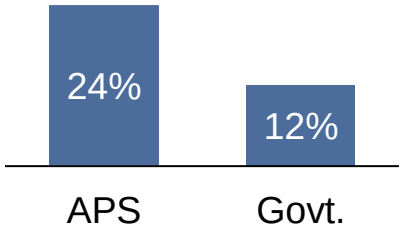
Sources: Photos - FSG

78% children entering Grade 1 in APSs could not read three simple three-letter words

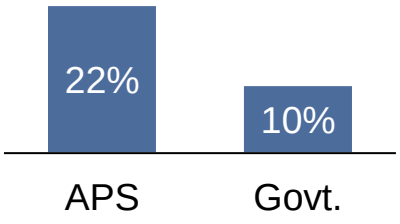
% of children entering Grade 1 that identified all of the 20 most common letters from the English alphabet[1]



% of children entering Grade 1 that correctly matched three simple words with their respective starting sounds



% of children entering Grade 1 that correctly read three simple three-letter words

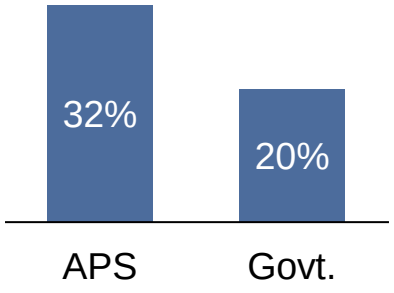


APS n= 207 Government n= 41

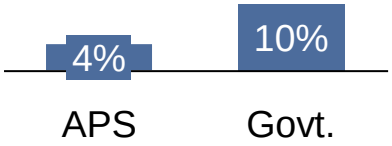
Notes: [1]The 20 most commonly occurring letters in English words; Preschoolers often tend to confuse letters such as b and d, which, other than in children with a possible learning disability, gets corrected as children get older. 84.5% of the children entering Grade 1 in APSs, and 58.5% of their peers in government schools were able to identify 18 or more of the 20 most common letters in the English alphabet; Mean age for APS Grade 1 sample: 5.83 years. Age data for many govt. school children was not available

9 96% children entering Grade 1 could not frame a coherent 3-10 word sentence in English

% of children entering Grade 1 that could name 8 or more edible items, or animals



% of children entering Grade 1 that could frame a sentence in English to describe a picture[1]



APS n= 207 Government n= 41

"Rat, mouse, cat, elephant, lion, dog"

"Cadbury, chips, chocolate, cold drinks"

Some responses from children when asked to name animals/market items

"Boys are running"

"Boy is play"

"Boy"

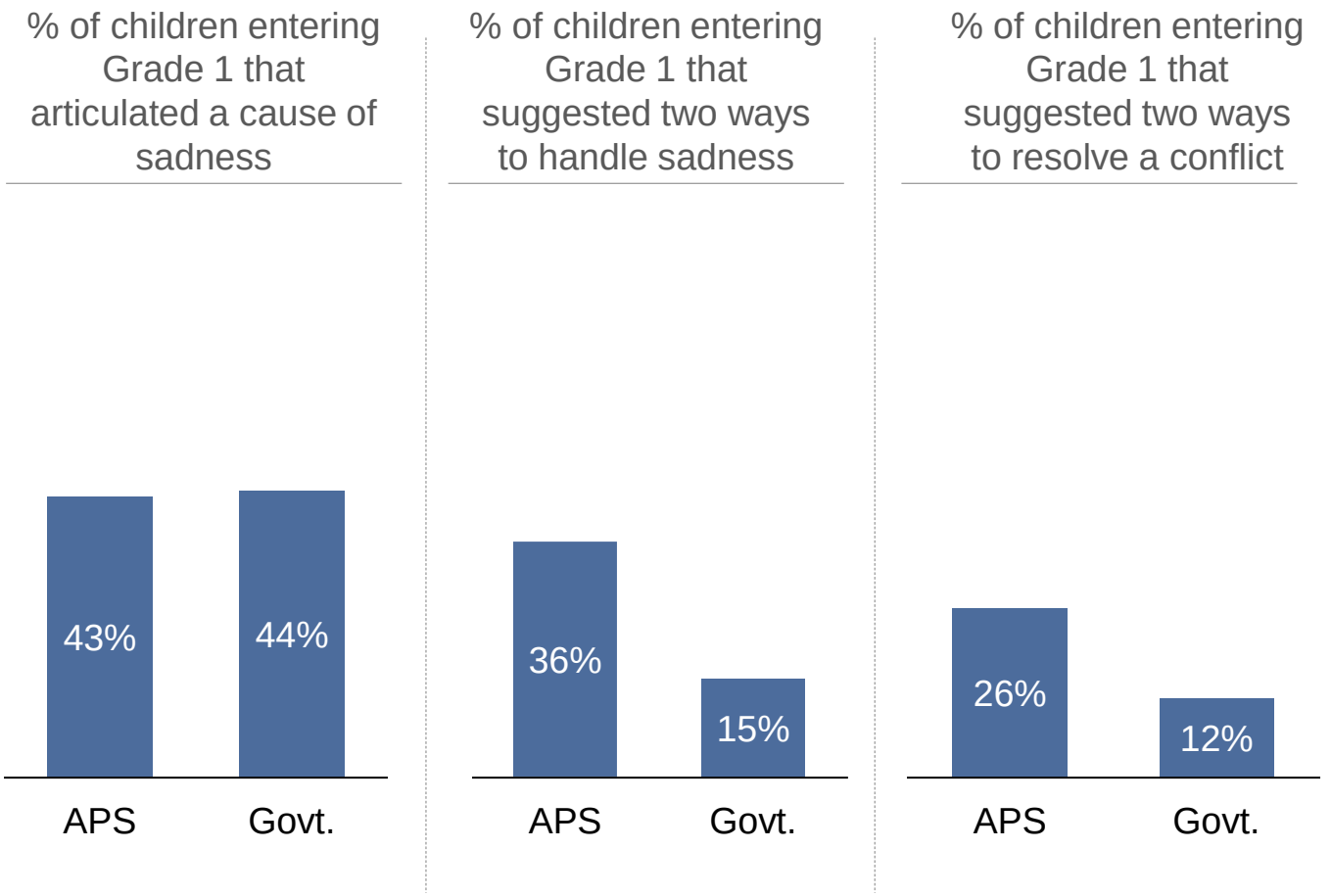
"Ladke khel rahe hain" (boys are playing)

Some responses from children when asked to describe in English, a picture that shows children playing

Satisfactory Not satisfactory

Notes: [1]The sentence need not be grammatically correct, but must be made of only English words and be coherent; Mean age for APS Grade 1 sample: 5.83 years. Age data for many govt. school children was not available

11 57% children entering Grade 1 in APSs could not identify a 12 cause of sadness



APS n= 207 Government n= 41

"My father hits me"

"I could not go to play with my friends"

Some responses from children when asked what made them sad

"I weep"

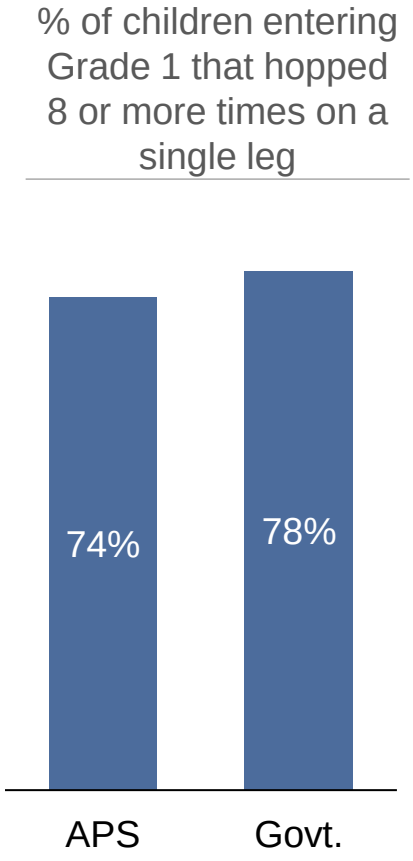
"My mother hugs me"

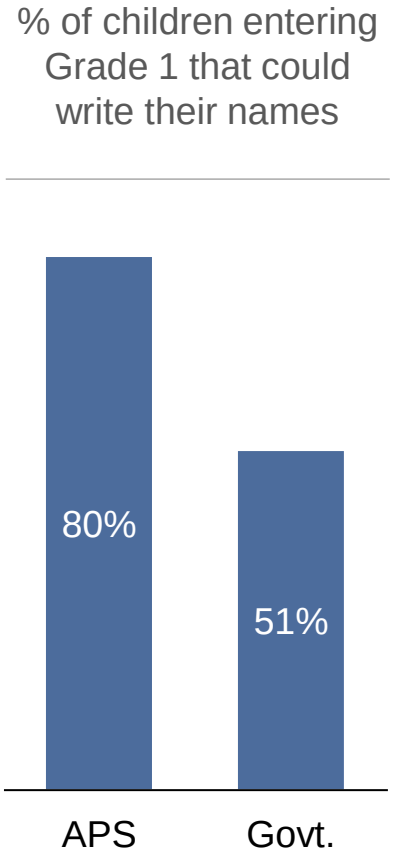
"My mother gives me candy"

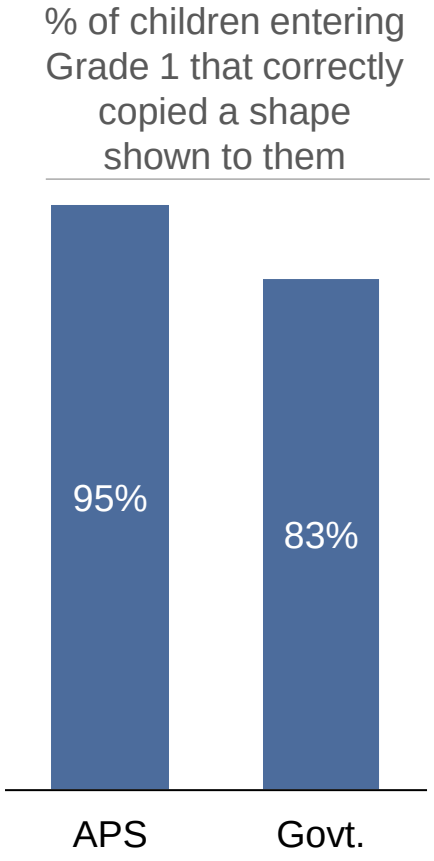
Some responses from children when asked what they did to cope with sadness

Notes: Mean age for APS Grade 1 sample: 5.83 years. Age data for many govt. school children was not available

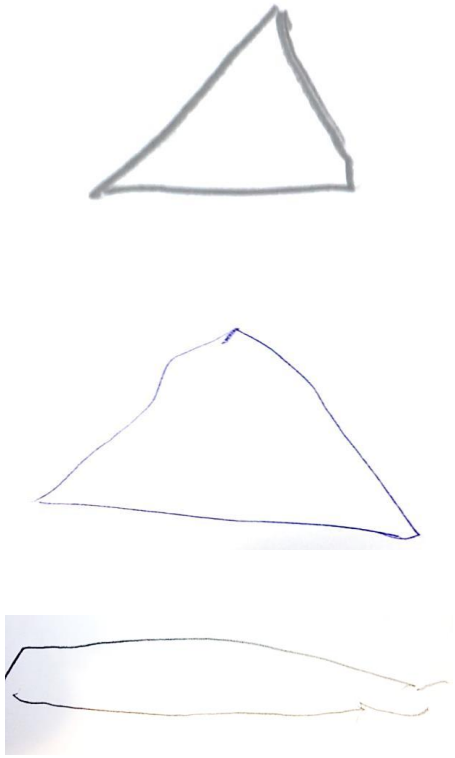
13 Gross and fine motor skills are not a problem for children 14 entering Grade 1 in APSs







APS n= 207 Government n= 41



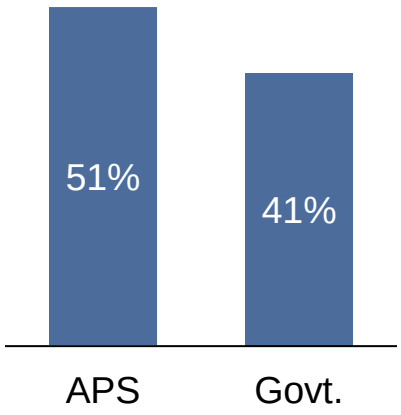
Shapes drawn by children when asked to copy a triangle

Notes: Mean age for APS Grade 1 sample: 5.83 years. Age data for many govt. school children was not available

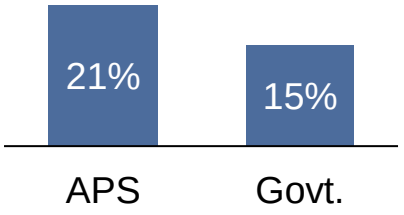
Sources: Photos – FSG, Save the children

15 79% of children entering Grade 1 in APSs could not reverse a sequence of three numbers – an indication of poor working memory

% of children entering Grade 1 that correctly repeated a 5-digit sequence of numbers



% of children entering Grade 1 that correctly reversed a 3-digit sequence of numbers

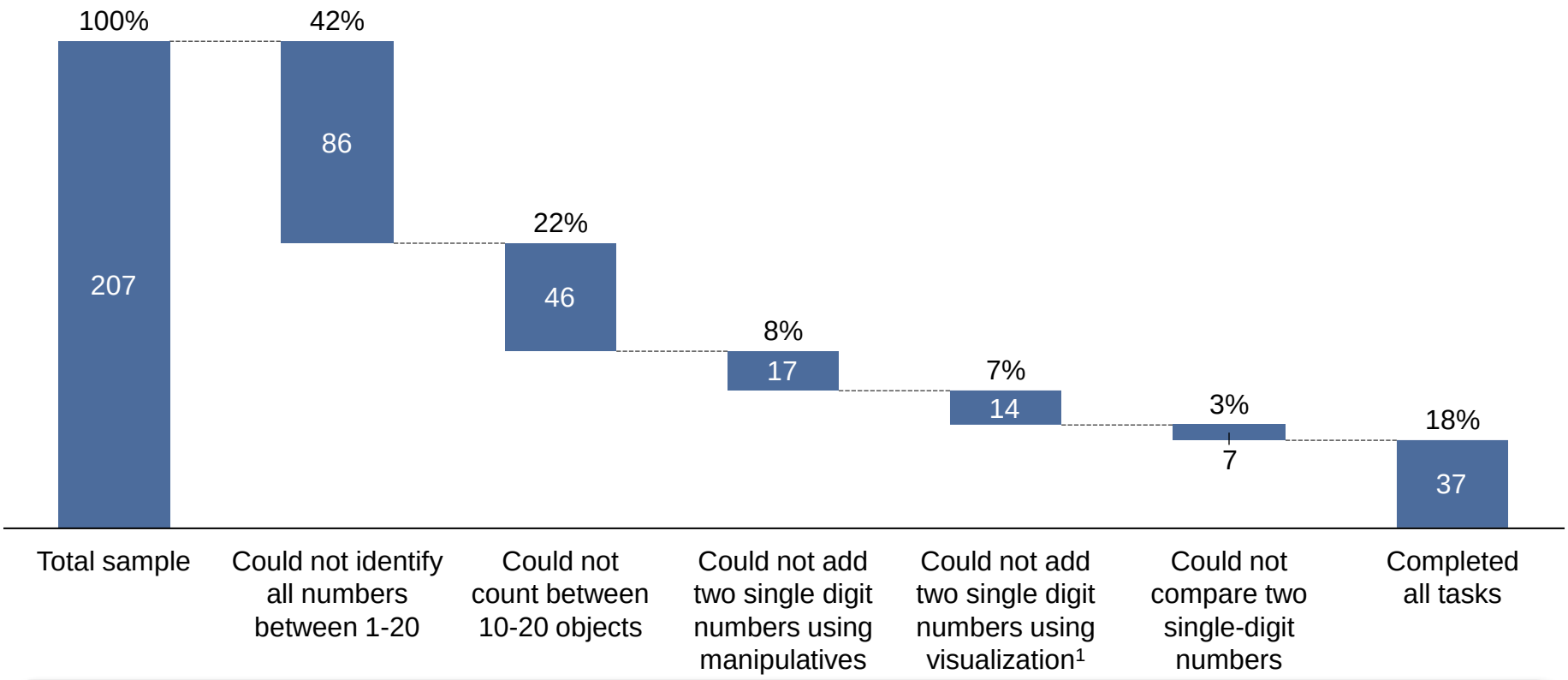


APS n= 207 Government n= 41

Notes: Mean age for APS Grade 1 sample: 5.83 years. Age data for many govt. school children was not available

Only 18% of the children entering Grade 1 in APSs demonstrated well-developed math skills

Performance of children entering Grade 1 in APSs on increasingly complex math tasks

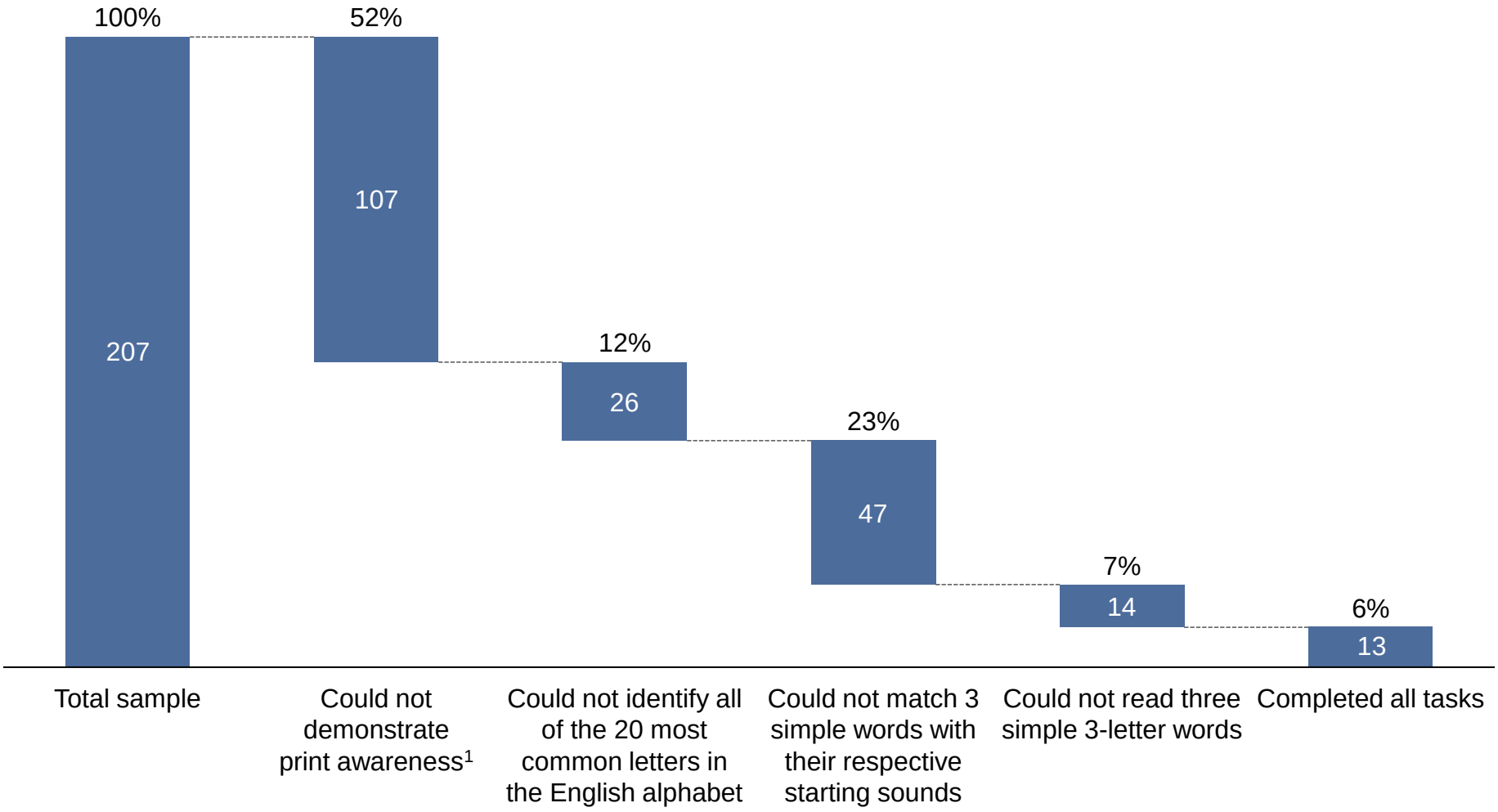


Guide to reading the graph: Each bar (Other than the one on the extreme right) shows children who could not complete a particular task, but had completed all earlier ones. E.g., out of the 121 children that identified all numbers from 1-20, 46 could not count between 10-20 objects, leaving 75, of whom 17 could not add two single-digit numbers (and so on)

Notes: [1]Children were shown some objects and asked what the total would be, if a similar number of objects were to be added (to the ones they were shown). The addition did not involve any carryover; Mean age for APS Grade 1 sample: 5.83 years

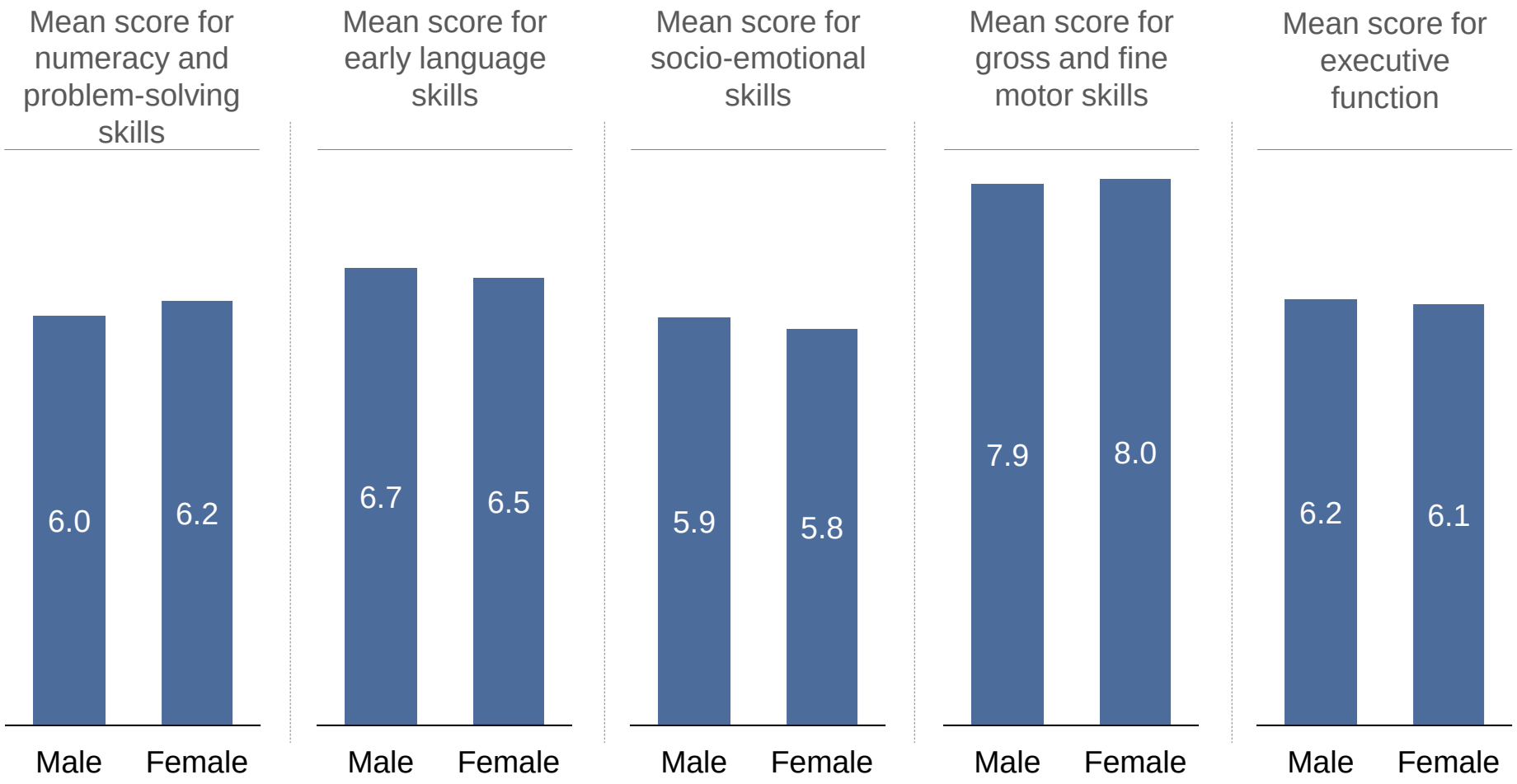
Only 6% of the children entering Grade 1 in APSs demonstrated well-developed language skills

Performance of children entering Grade 1 in APSs on increasingly complex language tasks



Notes: [1]Opened a book correctly, pointed to correct position from where to begin reading, and pointed to correct direction in which to continue reading; Mean age for APS Grade 1 sample: 5.83 years

Boys and girls entering Grade 1 in APSs were at similar levels in terms of development outcomes

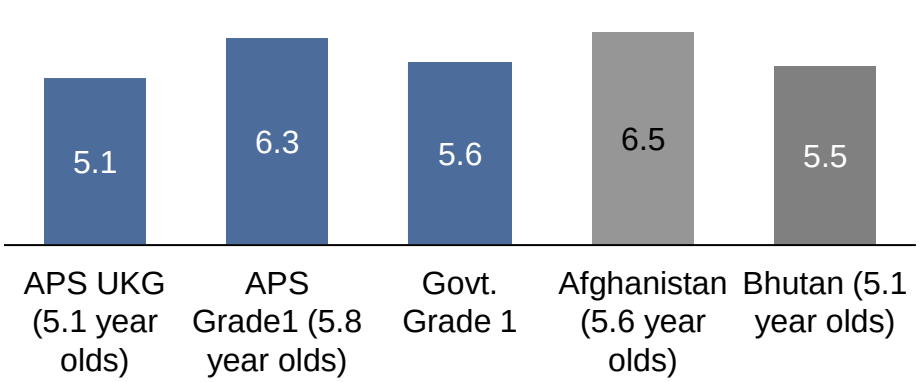


Male n= 102
Female n= 105

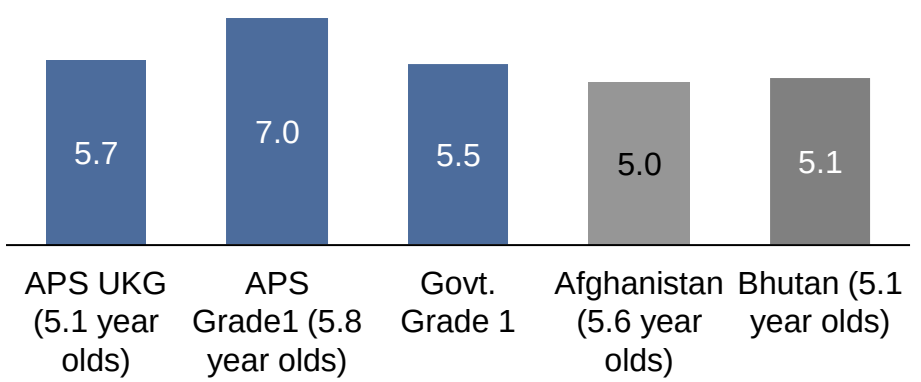
Notes: Mean age for APS Grade 1 sample: 5.83 years; Mean score for each domain was calculated by taking the average percentage score for the domain and converting it to a 10-point scale

Learning levels for Indian children in APSs were similar to urban children in Afghanistan and Bhutan

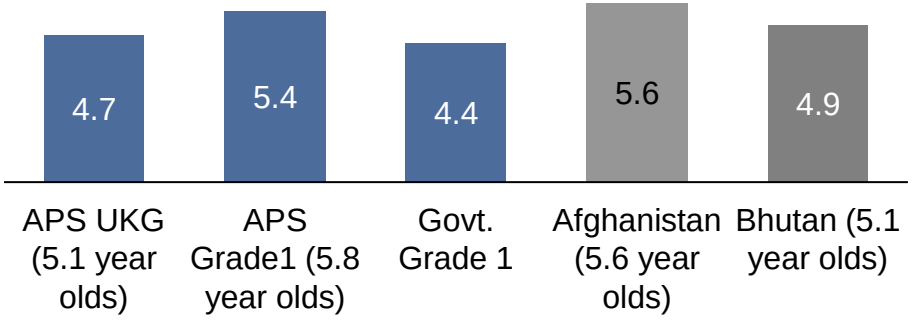
Mean score for numeracy and problem-solving skills



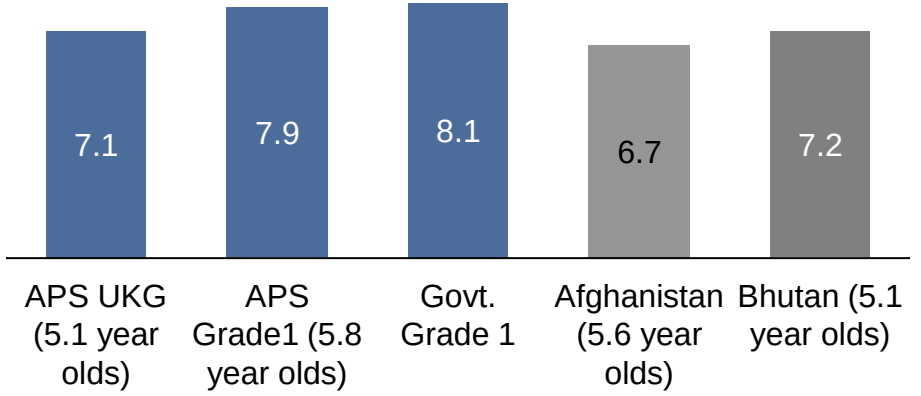
Mean score for early language skills



Mean score for socio-emotional skills



Mean score for gross and fine motor skills



APS UKG n= 195 APS Grade 1 n= 207 Government Grade 1 n= 41 Afghanistan n= 287 Bhutan n= 130

Notes: Ages in parentheses are the mean ages for respective samples. Age data for many govt. school children was not available; Data for Afghanistan and Bhutan from Save the Children assessments of children living in urban areas and aged between 5 and 6 years in 2015; Mean score for each domain was calculated by taking the average percentage score for the domain and converting it to a 10-point scale; Scores are on the 24-items in core IDELA

Contents

Contents

Overview of FSG Inclusive Markets (IM)

Mission	**To improve opportunities, agency, and choice for families with low-income** by working with companies to serve families as customers (and not with non-profits to serve them as beneficiaries)
Vision	**To demonstrate profitability of offering inclusive products, services, or practices** (e.g., housing, education, employment) that benefit families with low-income
Approach	• **Run multiyear programs to address barriers** that prevent companies from offering inclusive products, services or practices • **Talk to thousands of families to understand their needs**, aspirations, and challenges • **Talk to hundreds of CXOs and managers to understand their business**, ecosystem, regulatory and operational challenges • **Co-create, pilot and rollout solutions with companies** to address barriers and profitably scale inclusive products, services, or practices • **Publish and disseminate public goods** (e.g., primary research, best practices, business model) to get more companies to offer the product, service or practice • **Address ecosystem barriers** (e.g., policy suggestions) to make the market more conducive

Overview of PIPE

Replacing rote[1] with activity based learning[2] in affordable private schools[3] could improve learning outcomes for ~50% of children

~50% of children in India are enrolled in affordable private schools

- 40% of children in rural India are in private schools[4]
- 86% of families with low-incomes in urban India send their children to affordable private schools (APSs)[5]
- 54% of children in South Asia are enrolled in private schools for pre-primary education[6]

Current learning outcomes are poor due to rote teaching

- 35% of Grade 10 students can read at Grade 4 level[7]
- 84% of Grade 1 students can't read at grade level[8]
- Most private preschools follow mainly rote teaching with no age appropriate activities[9]

Adopting activity based learning in early years can provide the right educational foundation

- Poor learning outcomes in the early years leads to poor learning and life outcomes later[10]
- Children learn best using activity based learning (ABL) in the early years (ages 3-8)[11]
- Intervening in the early years gives the highest return on investments[12]

1. See example of rote teaching here
2. Learning through structured play-based activities, games, and experiences
3. Schools that typically charge fees under INR 1,500 (USD 23) per month, and offer classes from nursery to grade 10 or 12
4. ASER 'Early Years' Report (2019)
5. PIPE research based on 4400 interviews with families with low-incomes (2015)
6. UNICEF 'A world ready to learn' (2019)
7. Education Initiatives research based on an assessment of 50,000 students in Gujarat, Maharashtra and Rajasthan (2013-14)
8. ASER 'Early Years' Report (2019)
9. CECED, ASER, and UNICEF 'The India Early Childhood Education Impact Study (2017); PIPE research
10. S Lockhart, Play: An Important Tool for Cognitive Development (2010)
11. M. Hohmann, D.P. Weikart, 'Educating Young Children: Active Learning Practices for Preschool and Child Care Programs' (1999)
12. J Heckman and D. Masterov, The Productivity Argument for Investing in Young Children (2004)

Barriers to adoption of ABL are lack of demand and low willingness to serve APS market

APS administrators, teachers and parents are not demanding ABL

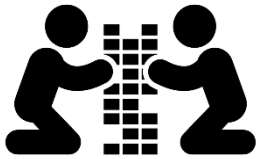
- Limited awareness of poor learning outcomes in children
- Limited awareness on the benefits of ABL
- Current rote memorization technique meets parents' demands

Solution providers[1] don't see a business opportunity to sell in the APS market

- Unclear business model to acquire and sell to APSs
- Fragmented market
- Unclear proposition for APS customers
- Lack of quality standards/ robust tools to assess quality

1. Solution providers are existing private companies currently providing ABL solutions including curriculum materials, teacher training and ongoing support to schools serving students from families with mid or high incomes

PIPE's vision is to replace rote with ABL in all 300,000 APSs in India



Mission	ABL solution providers **sell profitably and at scale** to APSs in India	ABL solution providers **make learning effective and enjoyable** for children	ABL solution providers **communicate the benefits of ABL** to stakeholders[1]
Goal by 2025	A **Scale supply:** 3 ABL solution providers serving >500 APSs each	B **Improve quality**: 50% better learning outcomes across all skills[2]	C **Shape demand:** Pervasive demand leads to 15% of APSs adopting ABL in one tier-1 city

D **Raise awareness**: Share approach, best practices, tools, and aspirations of families with 100 organizations annually

Detailed next

1. Stakeholders are APS administrators, teachers and parents
2. Skills include numeracy, early language skills, executive function, motor skills and socio-emotional skills

A Scale supply: PIPE partners are providing ABL to >150,000 children across 750+ APSs

Goal

3 ABL solution providers >500 APSs each

Activities

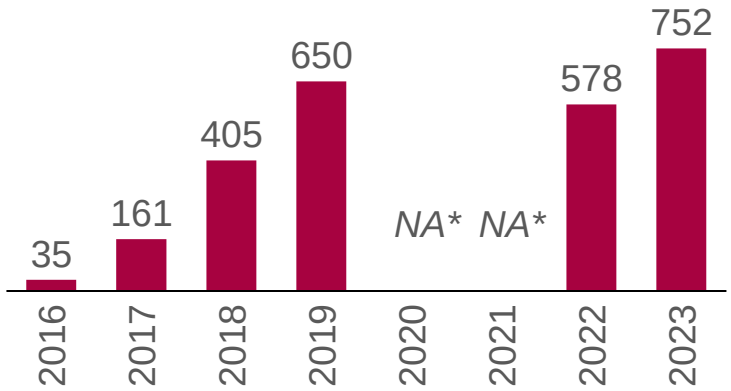
- Identified, convinced and **signed-up 8 partners** to the serve the APS market
- Developed a **profitable business model** for the APS market
- **Identified barriers and developed 23 best practices across 4 business functions** (i.e. product, sales, implementation and management) to support partners to profitably scale in the APS market
- Supported PIPE **partners to co-develop an effective organization structure and team to scale** (e.g., building a strong 2nd line of management)
- Supported PIPE partners to **embed managing by objectives** through a set of annual and monthly dashboards and metrics which determine business health

Impact to date

9 partners signed up

chrysalis, kreedo, HIPPOCAMPUS Learning Centres, 321, Next Education Transforming Education, The Karadi Path Education Company, Chipper Sage, Gyan Shala, vikalp instrument of ideas

# of APSs using PIPE partner solutions[1]



**as schools were closed due to COVID-19[2]*

1 –Based on data collected from partners I 2-Schools were physically shut due to COVID-19, and only remote learning products were offered by the partners to APSs during academic years 2020-21 and 2021-22 The PIPE team has been unable to verify children's extent of engagement with these remote learning products due to school closures and COVID travel restrictions

B Improve quality: Children in PIPE APSs responding correctly to numeracy and literacy questions increased by 33%

Goal

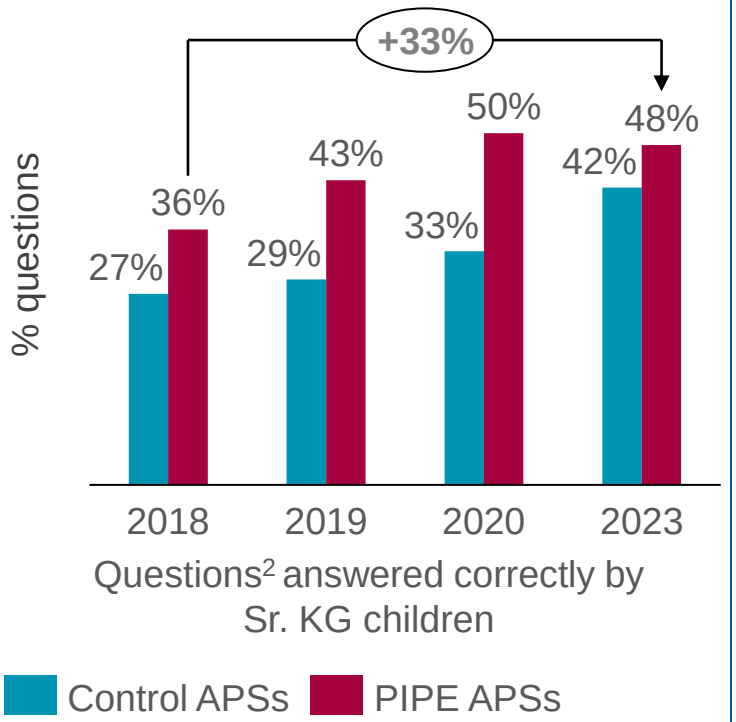
50% better learning outcomes across each skill

Activities

- **Developed public goods** based on research with 4400 parents, 28 APS administrators, 40 teachers, 167 ABL solution providers to:
  - Understand the **reasons for poor learning outcomes**
  - Leverage motivations of stakeholders to improve quality
- **Supported partners in adapting their product** for the APSs market and in improving teacher training
- Developed **'STARS', a tool to assess education quality** (including learning outcomes) in APS
- **Annually assessed and published learning outcomes** in PIPE APSs
- Supporting partners to **develop remote learning strategies to ensure learning continues** during the pandemic

Impact to date[1]

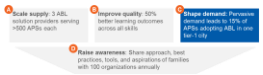
33% improvement Since 2018



PIPE could not conduct assessments in AY 2020-21 and AY 2021-22 as schools were shut due to COVID-19

1-Using the STARS tool. Sample sizes: 2018 (190 children in 38 PIPE APSs and 100 children in 20 control APSs), 2019 (636 children in 106 PIPE APSs and 168 children in 28 control APSs) , 2020 (492 children in 116 PIPE APSs and 210 children in 35 control APSs), 2023 (378 children in 63 PIPE APSs and 204 children in 34 control APSs) I 2- Represent 4 questions that were assessed from 2018-2023 – a. Can you read the word 'PIN'? b. Can you identify the largest number from a group of numbers? c. Can you count and give 12 sticks out of 20? d. Can you name any 6 animals?.

C Shape demand: Created and disseminated collateral to educate parents on the benefits of ABL



Goal

Pervasive demand leads to 15% of APSs adopting ABL in one tier-1 city

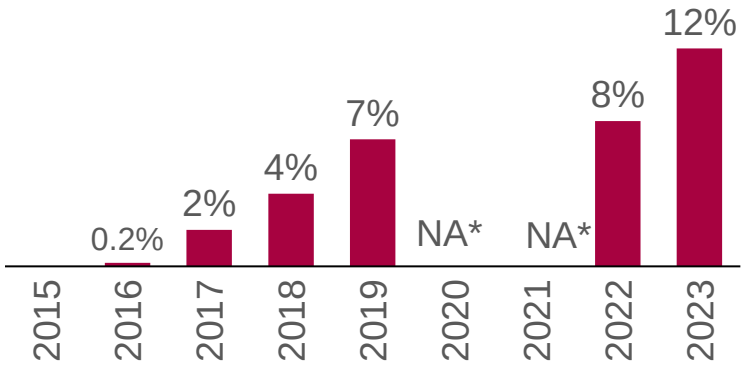
Activities

- Developed '**markers to test concepts**' to shape parental demand
- Developed **video and print collaterals** to educate stakeholders on key skills that children should be learning by age
- **Developed 8 videos to educate parents** about their child's current poor learning outcomes, and help them engage in simple activities with their children at home
- Supported partners in organizing '**learning exhibitions**' for parents, to showcase child learning outcomes due to ABL
- Developed '**Toys in a box**', an engaging set of 6-8 developmentally appropriate affordable toys that engage children on key developmental outcomes

Impact to date

Disseminated parent engagement videos to 100K+ parents

% of APSs in Bangalore adopting ABL[1]



**as schools were closed due to COVID-19[2]*

1 – Per PIPE's estimates, Bangalore has ~3,000 APSs Calculated based on the data reported by partners in July every year | 2 – Schools were physically shut due to COVID-19, and only remote learning products were offered by the partners to APSs during academic years 2020-21 and 2021-22

D Raise awareness: Shared the importance of early education and the APS market with ~180 organizations

Goal

Share approach, best practices, tools, and aspirations of families with 100 organizations annually

Activities

- **21 publications** including ANYAS, IDELA Equity
- **~50 presentations** at national and global conferences (e.g., Global Philanthropy Forum)
- **Whitepapers** highlighting program research (e.g. the PreschoolPromise)
- **9 best practices sharing sessions attended by ~20 organizations** (e.g. MSDF investee's)
- **10+ Videos** highlighting sales process, parent engagement etc.
- **~180 annual 1-1 update calls with people** from foundations, NGOs and other organizations working in the education space to share PIPE's approach

Impact to date

- **Companies have used PIPEs best practices and business model** to better target the APS market
- **Godrej** developed a program to support ABL solution providers by providing grants to APSs to "trial" the solution
- **AVPN** set up 'Early Learning Collective' as they realized that ECE can have high impact
- **Central Square Foundation** added a vertical that focuses on ECE based on PIPE research
- **Aga Khan Education Service, India** using videos developed by PIPE to communicate benefits of ABL to teachers and parents

Child development is a continuous process that manifests itself in “developmental domains”, comprising multiple “constructs”

	Developmental domain			
	Numeracy and problem-solving	**Early language skills**	**Socio-emotional skills**	**Motor skills**
Definition	• Ability to learn and solve problems	• Ability to understand and use language	• Ability to interact with others, including helping themselves and self-control	• Ability to use muscles (Fine motor: small muscles; Gross motor: large muscles)
Example constructs	• Number identification • Shape identification • Positionality (i.e., ability to discern relative positions of objects)	• Letter identification • Oral comprehension • Expressive vocabulary	• Self-awareness • Empathy • Emotional awareness	• Copying a shape • Folding paper • Hopping on one foot

Executive function

Constructs related to executive functions span across all the other four domains

Definition	**Example constructs**
Ability to plan, focus attention, remember instructions, and juggle multiple tasks successfully	EF involves three constructs – working memory, cognitive flexibility, and inhibitory control

Children learn and master different skills at specific developmental milestones[1] (1/2)

Illustrative list only

Domain	Milestone (age) 2-3 years	3 years	4 years	5-6 years
Numeracy and problem-solving skills	• Can work on 2-4 piece puzzles • Selects small number of objects from a group (1-3) • Recites number names in sequence • Begins to compare quantities	• Sorts objects by one property • Recognizes and recreates simple patterns • Imitates counting behavior	• Sorts objects by one property, then another • Extends simple patterns or creates simple patterns • Understands and uses positional words correctly	• Counts 10 or more things • Sorts objects into groups and states rationale • Creates, copies or extends complex patterns
Early language skills	• Uses simple sentences and questions with 3 or more words • Participates in conversations • Pretends to read a favorite book • Scribbles with intention	• Uses simple sentences to express wants and needs (3-4 words) • Answers simple questions with one or two words • Recognizes a few letters by name • Imitates act of reading and writing in play	• Notices words that begin in the same way • Uses longer sentences to communicate (6-7 words) • Recognizes and names many letters • Compares and predicts story events	• Hears and repeats separate sounds in words • Uses more complex sentences • Answers questions with details • Chooses to read on own, can make letter-sound correlations

Notes: [1]A developmental milestone is a skill that a child acquires within a specific time frame

Sources: "Executive Function and School Readiness" – National Association of Child Care Resource & Referral Agencies; "Statutory framework for the early years foundation stage", Department for Education, Government of the UK; Ages and Stages Questionnaire for 57-66 month olds (pg. 152-159); "Executive Function & Self-Regulation" – Centre on the Developing Child, Harvard University

Children learn and master different skills at specific developmental milestones* (2/2)

Illustrative list only

Domain	Milestone (age) 2-3 years	3 years	4 years	5-6 years
Socio-emotional skills	• Begins to use 'feeling' words • Begins to understand expected behavior • Starts responding to other's feelings with caring behavior (kisses a hurt, claps for another). Still predominantly looks at situations from her own point of view	• Identifies and labels own feelings • Follows rules with reminders • Plays cooperatively with one child • Is aware of other children's feelings and responds with similar feelings	• Describes feelings and their causes • Plays with a group of children • Shows increasing awareness that people may have different feelings • Shares toys and takes turns when playing with another child	• Plays well in group and maintains an ongoing relationship with at least one other child • Recognizes what another person may need or want • Shares and defends the right of others to a turn
Motor skills	• Scribbles • Copies simple lines and circles • Jumps on two feet • Balances on one foot for a few seconds • Attempts variety of large muscle activities	• Performs simple manipulations • Holds marker or crayon with thumb and two fingers; makes simple strokes • Moves with direction and some coordination • Shows some balance while moving	• Makes several basic strokes and figures, draws recognizable objects • Writes recognizable letters • Moves with direction and increasing coordination • Throws, catches, kicks with increased control	• Grips writing implements with control • Copies and draws simple shapes, letters and words • Shows balance while moving. Walks forward easily and backward with some effort • Throws, catches and kicks skills with greater accuracy

Notes: [1]A developmental milestone is a skill that a child acquires within a specific time frame

Sources: "Executive Function and School Readiness" – National Association of Child Care Resource & Referral Agencies; "Statutory framework for the early years foundation stage", Department for Education, Government of the UK; Ages and Stages Questionnaire for 57-66 month olds (pg. 152-159); "Executive Function & Self-Regulation" – Centre on the Developing Child, Harvard University

Contents

Approach to planning and conducting assessments

Select tool

- Developed criteria to assess potential tools
- Engaged with 10[1] experts to advise on process
- Modified criteria with expert inputs
- Selected the IDELA[2] tool for assessing child development outcomes by assessing 4 shortlisted tools against selection criteria and through expert inputs

Adapt tool

- Field-tested IDELA to identify gaps in coverage and administration
- Created an addendum of 8 items to the IDELA with expert inputs
- Pilot tested the addenda
- Finalized modifications with expert inputs
- Translated adapted tool into local languages

Plan assessments

- Determined sample composition (4 cities, 2 grades – Upper KG and Grade 1, equal representation of both grades and genders in the sample)
- Finalized target sample size (480 children – 402 from PIPE partner APSs and 78 from government and higher-priced private schools)

Conduct assessments

- Selected assessment agency
- Trained 13 evaluators on administering the tool
- Conducted assessments

Process findings and publish report

- Cleaned and analyzed data
- Published findings

Notes: [1]Experts consulted include Abbie Raikes, Venita Kaul, Nandita Jhaveri, Aisha Yousafzai, Nirmala Rao, Amanda Devercelli, Amber Gove, Jayanti Tambe, MS Tara, Vibha Krishnamurthy; [2]International Development and Early Learning Assessment; Please see Appendix 2 for more details on the approach, tools considered and selection criteria

Criteria used for selecting quality assessment tools for PIPE

1. **Select tool**
2. Adapt tool
3. Plan assessments
4. Conduct assessments
5. Process findings and publish report

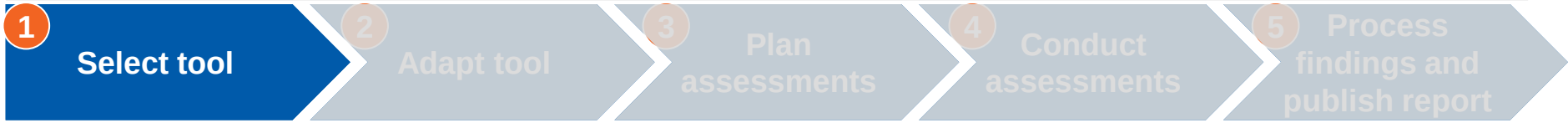
Criterion	Description
1 **Assess environment and impact**	• Class and home environment tests should help assess factors that influence child development outcomes (e.g., setup of classroom, nature of teacher-child and parent-child interactions) • Child tests should help assess age-specific child development outcomes (e.g. literacy, numeracy, social-emotional skills) • Assess factors that are relevant to PIPE (e.g., capture data on numeracy but not on nutrition)
2 **Produce granular results**	• Scale that provides sufficient range • Ability to distinguish between good, poor, great quality
3 **Possible to use at scale**	• Possible to be used by people without advanced qualifications in ECE • Support available from owner of tool
4 **Possible to adapt**	• Tool owners / managers open to adaptation • Minor modifications (i.e. a user manual or a glossary) are preferable compared to major modifications (i.e., adding or removing questions, changing questions)

Experts with varied relevant backgrounds were consulted for selecting and adapting assessment tool

1 Select tool | 2 Adapt tool | 3 Plan assessments | 4 Conduct assessments | 5 Process findings and publish report

Name	Designation and Organization
Abbie Raikes	Assistant Professor and Director of Global Early Childhood Development, University of Nebraska; Former Lead, Measuring Early Learning Quality & Outcomes project, United Nations Children's Fund (UNICEF)
Venita Kaul	Former Director, Centre for Early Childhood Education and Development (CECED), Ambedkar University, Delhi
Nandita Jhaveri	Independent education consultant; Former Principal, Saifee School, Mumbai
Aisha Yousafzai	Associate Professor of Global Health, Harvard T. H. Chan School of Public Health, Harvard University
Nirmala Rao	Professor, Early Childhood Education and Development, Hong Kong University
Amanda Devercelli	Acting Global Lead, Early Childhood Development, World Bank
Amber Gove	Director, Research, RTI International
Jayanti Tambe	Executive Director, Early Care and Education, University of California, Los Angeles
MS Tara	Independent education consultant; Former Regional Director, National Institute of Public Cooperation and Child Development
Vibha Krishnamurthy	Founder & Executive Director, Ummeed Child Development Center

PIPE considered a number of tools that assess child development outcomes for use in the program



Tools considered by PIPE[1]

- School Readiness Instrument (SRI)
- International Development and Early Learning Assessment (IDELA)
- Measuring Early Learning and Quality Outcomes (MELQO)
- Bayley Scales of Infant Development

Note: [1]Denver Scale and Muktangan Assessment Tool were dropped from the consideration set as PIPE could not get access to them

Tools were assessed across five key developmental domains

1 Select tool → 2 Adapt tool → 3 Plan assessments → 4 Conduct assessments → 5 Process findings and publish report

Development domain	Rationale
Numeracy and problem-solving skills	• Pre-math concepts of size, patterns, sequences, estimation, etc. are important to master for school readiness
Early language skills	• This is a focus of ECE settings and lays the foundation for other learning • Pre-reading, sound and letter awareness and recognition are necessary skills for school readiness
Motor skills	• Fine motor skills are important for preparedness for formal writing etc. • Gross motor skills are important to master control of major muscle groups in the body in order to engage in more complex physical activities later
Socio-emotional skills	• Interacting with peers, adapting to different adults and environments, etc.
Executive function	• Ability to plan, focus attention, remember instructions, and juggle multiple tasks successfully

Notes: While language and math are two components of the various areas of development, formal schools in India tend to focus more on these two and hence in reference to school readiness these have been ranked higher. In terms of motor skills, for school readiness, fine motor skills will probably have more focus than gross motor skills. Also, while it is important to ensure math and language mastery, there needs to be a balance in the focus on other categories as well.

PIPE tested shortlisted tools, and in consultation with experts, selected the IDELA tool for assessments (1/2)

1 Select tool → 2 Adapt tool → 3 Plan assessments → 4 Conduct assessments → 5 Process findings and publish report

Criteria on which tools were evaluated	Tool options[1,2]		
	SRI[3]	MELQO[4]	IDELA[5]
Coverage of key domains • Numeracy and problem-solving • Early language • Motor • Socio-emotional • Executive Function	✓ (Pre-numeracy, math) ✓	✓ ✓ ✓ (Fine motor) ✓ ✓	✓ ✓ ✓ ✓ ✓
Openness to adaptation	• Yes	• Yes	• Yes – open to limited extensions to core tool
Training available	• Yes	• To be developed	• Yes

Preferred option

Notes: [1]Tick marks indicate that the domain is covered by the tool; [2]Text in parentheses indicates that the tool covers only that specific construct; [3]School Readiness Instrument; [4]Measuring Early Learning and Quality Outcomes; [5]International Development and Early Learning Assessment; The Bayley Scales of Infant Development were not considered as they are applicable only for children up to 42 months of age

PIPE tested shortlisted tools, and in consultation with experts, selected the IDELA tool for assessments (2/2)

1 **Select tool** | 2 Adapt tool | 3 Plan assessments | 4 Conduct assessments | 5 Process findings and publish report

Overview of IDELA

- The **International Development and Early Learning Assessment (IDELA)** is a **play-based** assessment tool developed by Save the Children
- It is targeted at children **aged 3.5 - 6.5 years**
- IDELA is designed for **global use**, and assessments are feasible for **low resource settings**
- It has **24 items** that cover **5 development domains** (i.e., early numeracy, early literacy, socio-emotional development, executive functioning, and motor development)
- IDELA has been successfully **adapted and used** in **25+ countries**

Notes: Slide adapted from Save the Children

PIPE identified skills that were either not being assessed by IDELA or could be assessed more deeply

1 Select tool | **2 Adapt tool** | 3 Plan assessments | 4 Conduct assessments | 5 Process findings and publish report

Domain	Skill (construct)
	Skills not included in IDELA but developmentally appropriate
Numeracy and problem-solving	• Number/quantity comparison • Ability to work with patterns • Positionality (spatial understanding)
Early language	• Spoken English • Reading simple phonic words (e.g. consonant, vowel, consonant)
	Skills included in IDELA but could be assessed in greater detail
Executive function	• Working memory • Inhibitory control

Note: PIPE identified above constructs/skills after consulting ECE experts and review of literature (including other assessment tools) on assessment of child development outcomes

PIPE consulted experts and other tools to create an “addendum” to IDELA that can assess the additional skills (1/2)

1 Select tool | 2 Adapt tool | 3 Plan assessments | 4 Conduct assessments | 5 Process findings and publish report

Domain: Numeracy and problem-solving

Construct not assessed in IDELA	Item included in addendum	Rationale for inclusion	Source of item
• Quantity and number comparison	• Identifying the greater quantity, and the greater numeral	• Ability to compare quantities and numbers is an important pre-math skill	• MELQO
• Patterning	• Copying a pattern • Completing a pattern	• Ability to work with patterns is an important pre-math skill	• SRI
• Positionality	• Identifying objects by their position, relative to a table	• Understanding of positionality is an important concept for spatial understanding	• MELQO

PIPE consulted experts and other tools to create an “addendum” to IDELA that can assess the additional skills (2/2)

1 Select tool | 2 Adapt tool | 3 Plan assessments | 4 Conduct assessments | 5 Process findings and publish report

Domain: Early language

Construct not assessed in IDELA	Item included in addendum	Rationale for inclusion	Source of item
• Reading skills	• Reading simple, three-letter phonic words	• Schools expect children to read simple words in Grade 1	• PIPE
• Expressive vocabulary	• Speaking in a full sentence to describe a picture	• Spoken English is an important skill • Item has been administered as part of SRI assessments	• SRI

PIPE followed the same process to add items that assess skills related to Executive Function in greater detail

1 Select tool | 2 **Adapt tool** | 3 Plan assessments | 4 Conduct assessments | 5 Process findings and publish report

Construct	Item included in addendum	Rationale for inclusion	Source of item
• Working memory	• Backward digit span	• Assess working memory at a higher skill level	• MELQO
• Inhibitory control	• Knocking or tapping (opposite of whatever the evaluator does)	• Assess inhibitory control using a set of visual cues (in addition to the IDELA task that provides auditory cues)	• LEAPS[1] study (being conducted by Aisha Yousafzai in Pakistan)

Notes: [1]Learning and Educational Achievements in Punjab Schools

PIPE planned to assess ~500 children entering UKG and Grade 1 in APSs, government schools, and higher-priced private schools

1 Select tool | 2 Adapt tool | **3 Plan assessments** | 4 Conduct assessments | 5 Process findings and publish report

Sample composition

- Children entering UKG and Grade 1 from PIPE partner APSs, government-run schools, and higher-priced private schools were assessed
- For PIPE partner APSs –
  - Children entering UKG and Grade 1 were assessed in equal numbers (as far as possible)
  - Children of both sexes were assessed in equal numbers in each class (as far as possible)
  - Children from 25 APSs were assessed. Schools were selected to ensure –
    - All single-intervention[1] APSs were included
    - APSs in all four PIPE cities[2] were selected
    - APSs in the sample were distributed uniformly across the cities (as far as possible)
- For government-run and higher-priced private schools, PIPE leveraged contacts in communities and schools to gain access to children for assessments

Sample sizing

- For PIPE partner APSs, 400 children were targeted to be assessed
  - 8 children were targeted to be assessed from each class, and from each gender
- For government-run and higher-priced private schools, around 50 children were targeted to be assessed from each type of school

Notes: [1]PIPE is piloting 6 interventions in partner APS during Academic Year (AY) 2016/17; [2]PIPE is working in Bangalore, Delhi, Hyderabad and Mumbai for AY 2016/17

PIPE selected an agency experienced in child assessments, and trained their evaluators on administering IDELA and the addenda

1 Select tool | 2 Adapt tool | 3 Plan assessments | **4 Conduct assessments** | 5 Process findings and publish report

Selection of assessment agency

- PIPE invited agencies with assessment experience to submit proposals for conducting baseline assessments and selected the assessment partner from amongst applicants

Training of evaluators

- PIPE team members managing the assessments were trained on administering the IDELA by experts from Save the Children
- PIPE used material and methodology from Save the Children to train 13 evaluators before the assessments
  - Evaluators were trained for 4 days (1 day orientation and 3 days practice)
  - 4 evaluators were trained for Bangalore and Hyderabad (each), 3 for Mumbai, and 2 for Delhi




Children were randomly selected for assessment, while maintaining a roughly equal distribution by grade and gender

1 Select tool | 2 Adapt tool | 3 Plan assessments | **4 Conduct assessments** | 5 Process findings and publish report

Selection of children for assessment

- **In PIPE partner APSs –**
  - For each class, every 3rd child in the attendance register was selected
  - Selection methodology was adapted to ensure an equal distribution of boys and girls from each class, as far as possible
  - If the selected child was absent, the next child was selected
- **In government schools –**
  - In Bangalore and Hyderabad, the methodology followed was same as that for APSs
  - In Delhi and Mumbai, all children available for assessment (through contacts in the community) were assessed
- **In higher-priced private schools –**
  - In 1 Bangalore school, the methodology followed was same as that for APSs
  - All other children assessed from this segment were children that PIPE could access through personal contacts

Most children were assessed at their schools, during school hours, while some were assessed at other times and locations

1 Select tool | 2 Adapt tool | 3 Plan assessments | **4 Conduct assessments** | 5 Process findings and publish report

Assessments

- Each child was assessed by one evaluator
- All APS children were assessed at the school during school hours
- Govt. school children in Bangalore and Hyderabad were assessed at the school during school hours
- Govt. school children in Delhi and Mumbai were assessed in their communities, after school hours
- Children from higher-priced private schools were assessed either at their schools or in residential complexes

REIMAGINING SOCIAL CHANGE