FSG REIMAGINING SOCIAL CHANGE

PIPE Impact Assessment 2019

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

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PIPE conducted assessments in APSs to understand the impact and sustainability of PIPE partner solutions

Objectives of the assessment

- **Track impact of PIPE partners** in APSs by measuring change in the classroom environment and child learning outcomes

- **Track sustainability of PIPE partner solutions** by measuring administrator, teacher and parent awareness on good pedagogy and learning outcomes

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PIPE signed up 106 PIPE and 28 Control APSs that are representative of the same target population
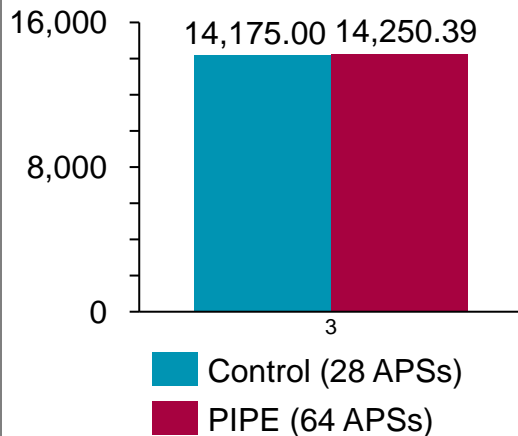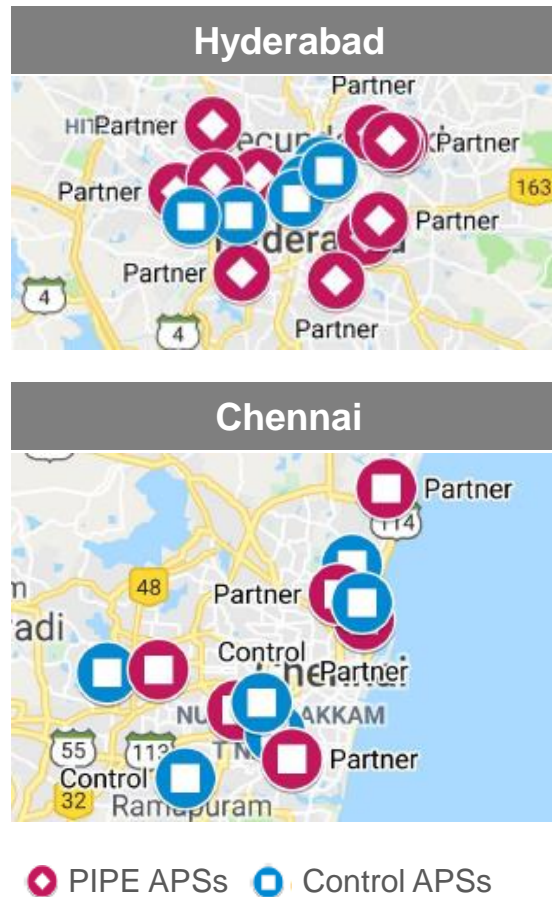
Similar segment of schools

- Private schools that are not government-aided, trust-aided or trust-funded
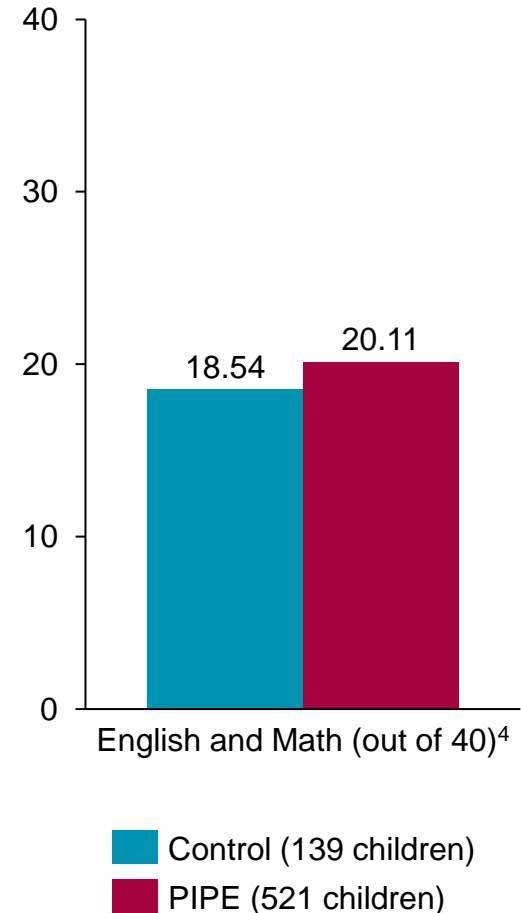- Operate pre-primary to Grade 10
- All inclusive annual fee < INR 21,000[1]

Similar fees[2] (INR)

Control (28 APSs)
PIPE (64 APSs)

Bar values: 14,175.00 (Control), 14,250.39 (PIPE)

Same neighbourhood [1]

Hyderabad

Chennai

◇ PIPE APSs   ◻ Control APSs

Similar outcomes in grade 2 with no intervention[3]

English and Math (out of 40)[4]

Bar values: 18.54 (Control), 20.11 (PIPE)

Control (139 children)
PIPE (521 children)

1. Based on PIPE teams' understanding of the schools and neighbourhood
2. Includes books, tuition fee, admission/ readmission fee, uniforms, etc. and excludes transportation | For PIPE schools, fees were reported by partners | For control schools, fee details were collected from the school directly
3. Typically follow traditional pedagogy (no external play-based intervention) | 4. Each student was asked 5 English and 3 Math questions

PIPE developed STARS[1] and hired an external organization to conduct assessments

- **Developed the Scoring Tool for Assessing Readiness at School (STARS)[1]** to assess the impact and sustainability of ABL in APSs

  - The **tool assesses schools across 5 key sections** namely classroom environment[2], Sr. KG student learning outcomes[3] and interviews with administrators, teachers and parents

- **Identified and signed up 134 APSs** that included

  - 106 APSs with partner solutions

  - 28 APSs with no partner solutions

- **Shortlisted and trained assessors** from Modulus Research and Analysis who were shortlisted for this study

- **Ensured data consistency and accuracy** by

  - Shadowing all assessors on their first 2 assessments across 8 cities

  - Conducting 9 surprise spot checks at schools covering all assessors across 5 cities

- **Organized and analyzed the data** to identify key findings which have been listed in this document

PIPE shortlisted Modulus Research & Analysis after soliciting services from 4 agencies to conduct the impact assessment

Assessment conducted by Modulus Research & Analysis

1. To refer to the Scoring Tool for Assessing Readiness at School (STARS) (formerly known as the Preschool Assessment Tool (PAT)) and the approach to developing the tool visit *STARS>>*
2. Adapted ECERS R to the Indian APS context. To learn more, visit *www.fsg.org/PIPE*
3. Selected questions from an adapted version of IDELA for the Indian APS context. To learn more visit *STARS>>*

STARS contains 5 sections to track sustainability and impact of good pedagogy

	Impact		Sustainability		
Sections	**Student learning outcomes assessment**	**Classroom environment observation**	**Teacher interview**	**Administrator interview**	**Parent interviews**
Description	• Measures children' learning outcomes in English, Math, executive function and cognition	• Observe physical setup of classroom • Assessing culture through peer interactions and teacher-student engagement	• Checks if teachers – know ABL teaching methods – assess learning – share benefits with parents	• Checks if administrators – know ABL teaching methods – assess learning – share benefits with parents	• Checks if parents – know ABL teaching methods – assess learning – support learning at home
Rationale	• ABL will improve children's understanding of concepts and learning outcomes	• Supportive and interactive classrooms are essential in helping children learn	• Awareness and adoption of good pedagogy are essential to good implementation of ABL	• Administrator buy-in and understanding is essential for continued use of ABL	• Conducive home environment is essential to reinforce learning
Examples[1]	• Can you read "PIN"?	• Correct Usage of learning materials by the teachers is observed	• How would you teach the numbers 11-20 to your class?	• According to you, how does a good teacher teach counting? Can you give examples?	• What do you do at home to help your child learn Math?

1. To refer to the Scoring Tool for Assessing Readiness at School (STARS) (formerly known as the Preschool Assessment Tool (PAT)) and the approach to developing the tool visit *STARS>>*

STARS is scored on 98 with the impact section totalling to a score of 51

Section		Normalized score	Score (D=A*B*C)	# of questions (A)	Maximum score per question (B)	# Assessed (C)
IMPACT	**Classroom environment**	**27²**	**36**	12	3	1
	Child learning outcomes	**24³**	**48**			
	End of Sr. KG	24³	48	8	1	6
	End of Grade 2	Not scored				
SUSTAINABILITY	**Administrator interview**	**13.5³**	**27**	9	3	1
	Teacher interview	**13.5³**	**27**	9	3	1
	Parent interview	**20³**	**40¹**	6	4 questions with a maximum score of 1.5 / 2 questions with a maximum score of 1	5
Total score		**98**	**178**	46		

1: Parent interview scores = (4*1.5*5)+(2*1*5) =40 | 2: D*0.75 (36*0.75 = 27) | 3: D*0.5

The findings in this document are based on assessment of 134 APSs across 8 cities

Assessment includes	134 Sr. KG classrooms	804[1] Sr. KG children	660[2] Grade 2 children	670 parents	134 Sr. KG teachers	134 administrators[3]
PIPE APSs	106 classrooms	636 children	521 children	530 parents	106 teachers	106 admin
Control APSs	28 classrooms	168 children	139 children	140 parents	28 teachers	28 admin

Cities	**Bangalore, Chennai, Delhi, Mumbai, Hyderabad, Mysore, Mangalore and Coimbatore**

1. Includes 412 boys and 392 girls | 2. Includes 339 boys and 321 girls | 3. Includes principals, owners, management, in-charge, etc.

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PIPE APSs have scored better than control APSs across all sections on the impact assessment

1 Sr. KG children in PIPE APSs scored 51% higher on learning outcomes as compared to control APSs[1]

2 Sr. KG children in PIPE APSs are doing better in Math, reading and working memory

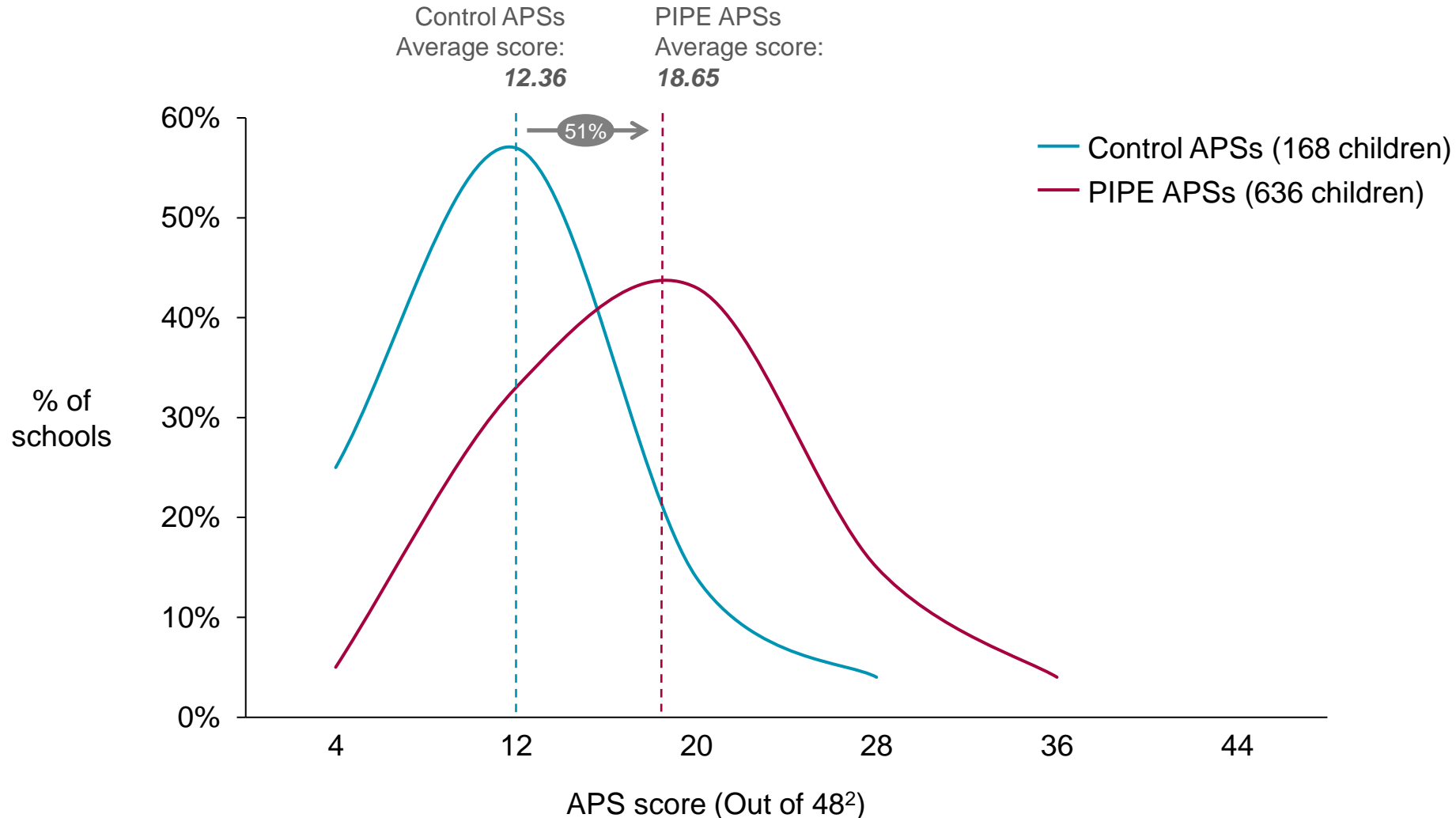**3** Sr. KG children in PIPE and control APSs scored low in spoken English, cognition and executive function

4 PIPE APSs in 2019 are performing better than PIPE APSs in 2018

5 Sr. KG classroom environment in PIPE APSs is 86% better than in control APSs

6 Capability of Sr. KG teachers in PIPE APSs has improved due to training and coaching by PIPE partners

7 There is significant variance and potential for improvement amongst PIPE partners

[1] The scores are not a judgement of a child's academic ability, but a large scale assessment of learning levels. No disclosure on any individual child data is made under any circumstance

Sr. KG children in PIPE APSs scored 51% higher on learning outcomes as compared to control APSs

Control APSs
Average score:
12.36

PIPE APSs
Average score:
18.65

51%

Control APSs (168 children)
PIPE APSs (636 children)

% of schools

APS score (Out of 48[2])

1. No variance in scores between Sr. KG boys and Sr. KG girls was observed
2. In each APS, 6 Sr.KG children were assessed on 8 questions, each – 4 in math and 1 each on reading, executive function, spoken English and working memory

Percentage of children that answered question correctly
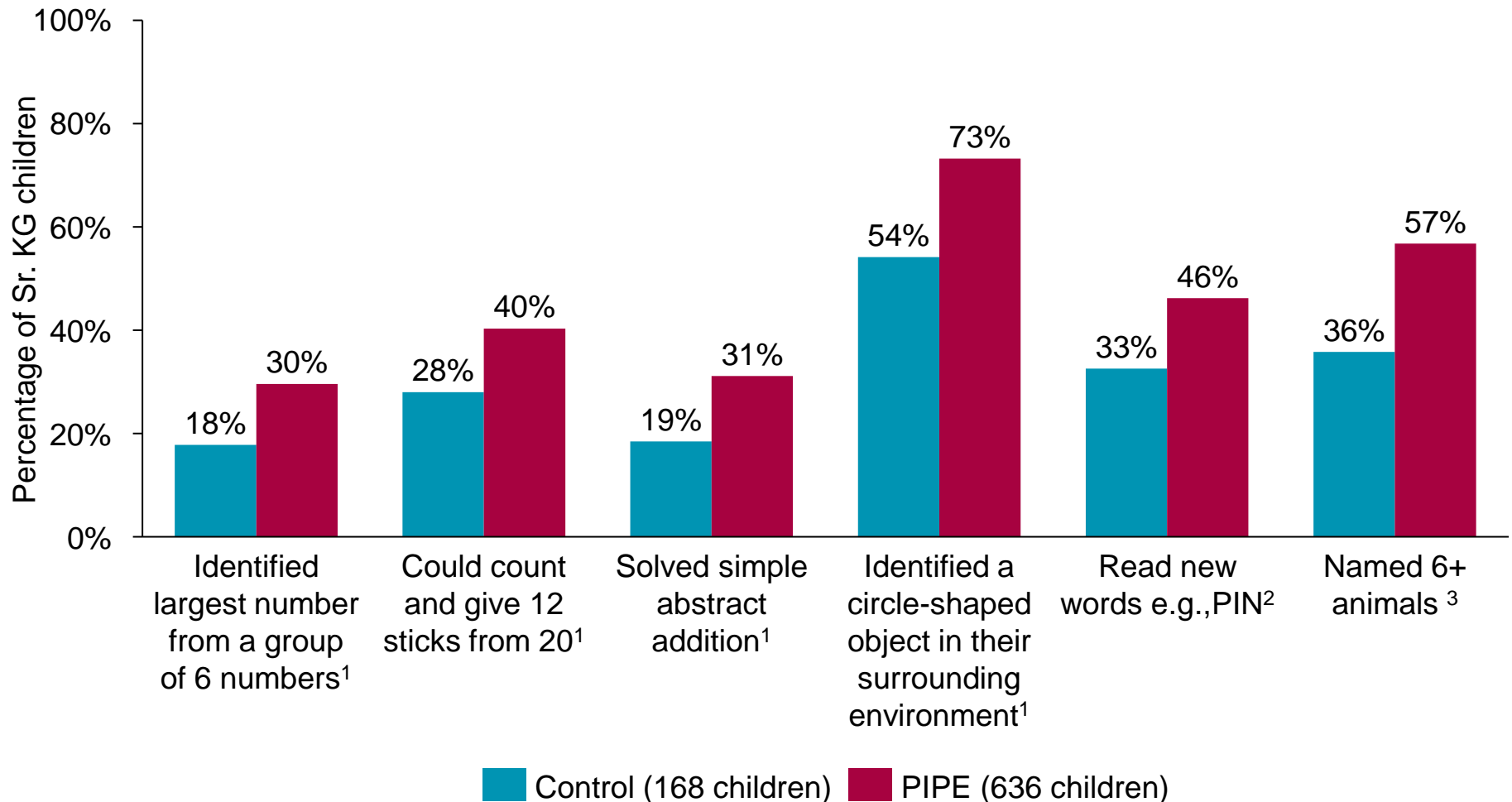
Bar chart showing percentage of Sr. KG children answering correctly, comparing Control (168 children) and PIPE (636 children):

Question	Control	PIPE
Identified largest number from a group of 6 numbers[1]	18%	30%
Could count and give 12 sticks from 20[1]	28%	40%
Solved simple abstract addition[1]	19%	31%
Identified a circle-shaped object in their surrounding environment[1]	54%	73%
Read new words e.g.,PIN[2]	33%	46%
Named 6+ animals[3]	36%	57%

■ Control (168 children)   ■ PIPE (636 children)

Sr. KG children in PIPE and control APSs scored low in spoken English, cognition and executive function

Percentage of children that answered each question correctly

7%   17%

Were able to say a simple sentence
(e.g., girl playing) when shown a picture

12%   17%

Solved a 4 piece puzzle
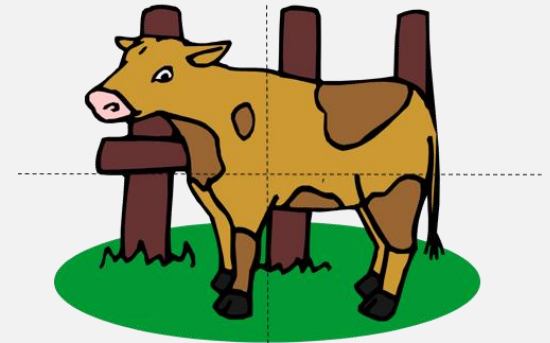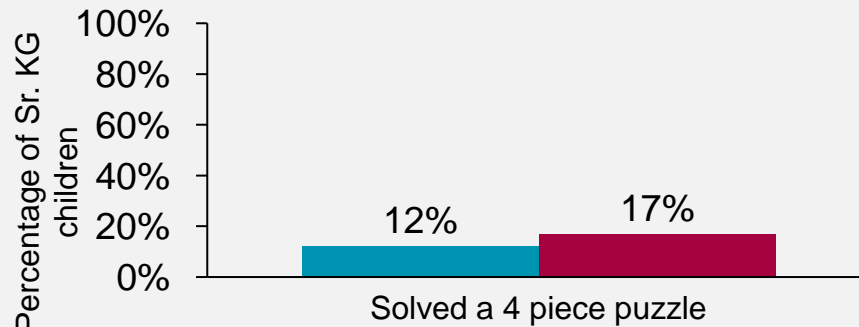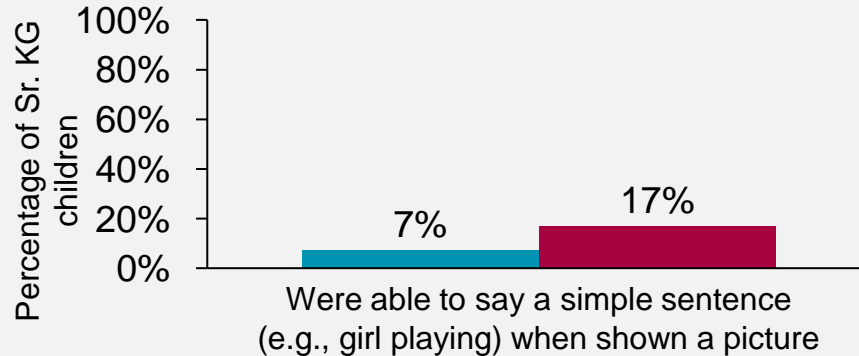
■ Control (168 children)   ■ PIPE (636 children)

Across all APSs, less than 20% children could solve a 4 piece puzzle or say a sentence about a picture shown to them

PIPE APSs in 2019 are performing better than PIPE APSs in 2018

Percentage of Sr. KG children that answered each question correctly[1]

Percentage of Sr. KG children

	Read new words e.g.,PIN	Identified largest number from a group of 6 numbers	Could count and give 12 sticks from 20	Named 6+ animals from memory
PIPE 2018	44%	24%	27%	50%
PIPE 2019	46%	30%	40%	57%

■ PIPE 2018 (190 children) ■ PIPE 2019 (636 children)
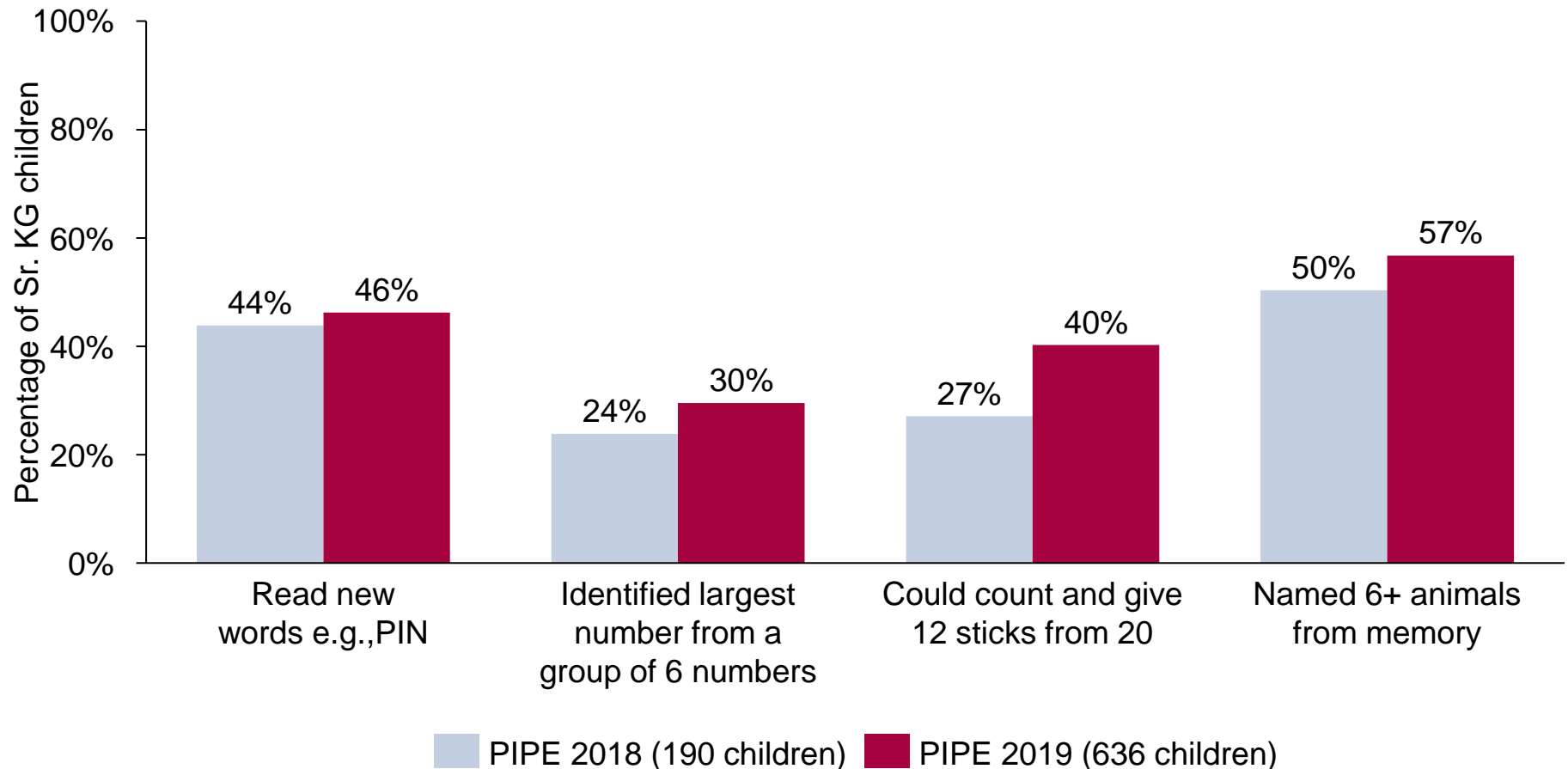
1. Represent questions that were assessed in 2018 and 2019

Sr. KG classroom environment in PIPE APSs is 86% better than in control APSs

Average Sr. KG classroom environment score (Out of 27)

Average score

+86%

9.55

5.14

Control APSs   PIPE APSs

Sample size   28   106
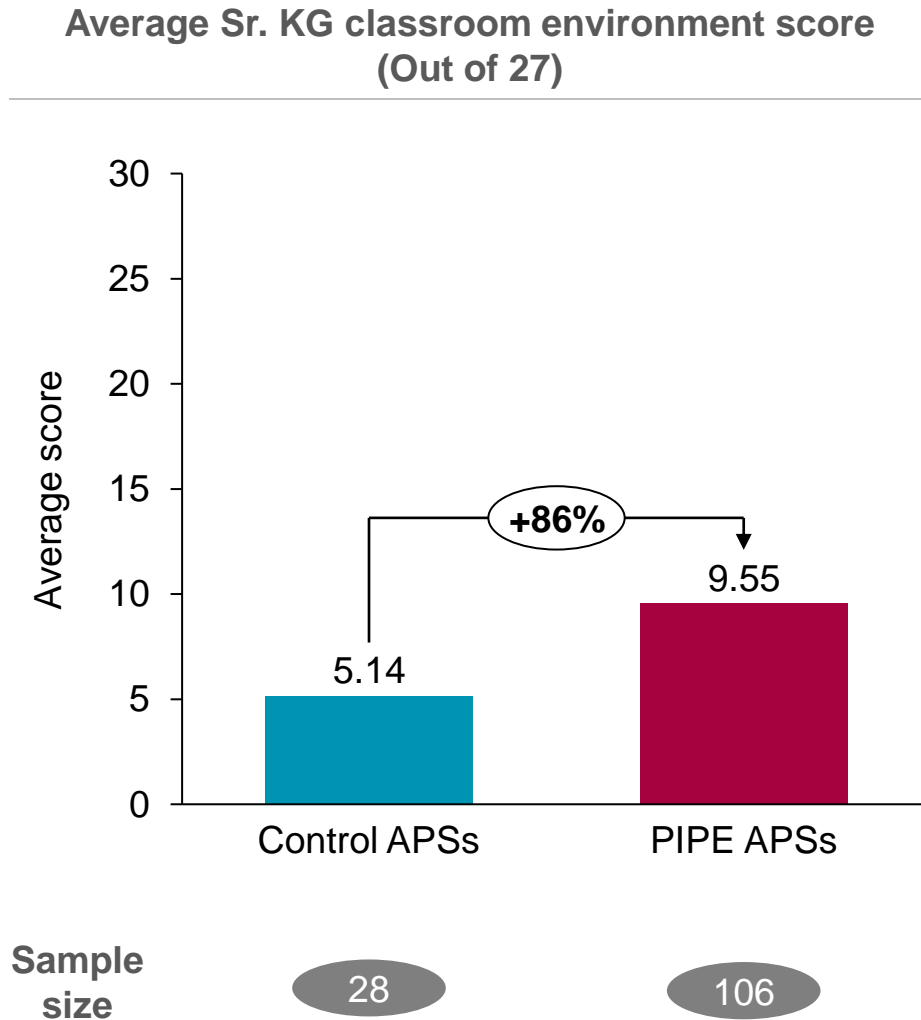
What went well in PIPE classrooms

- **Better staff-child interaction** as more PIPE teachers provide positive feedback/ reinforcement during classes

- **High student engagement** as most children in PIPE schools are engaged on a task for most of the time

- **Greater exposure to new vocabulary** as more PIPE teachers are introducing and explaining new words

Challenges across PIPE and control classrooms

- **No to limited time spent on peer interaction**

- **Limited opportunities for children to express** as majority of questions are closed-ended

- **Limited reference to displays or child artwork** to reinforce key concepts, despite having relevant materials in the classroom

Capability of Sr. KG teachers in PIPE APSs has improved due to training and coaching by PIPE partners

% of teachers[1] correctly using at least one learning material to teach concepts

Control	14.29% — 28
PIPE	75.47% — 106

% of teachers[1] who ask children questions to test understanding of activities/ concepts being taught

Control	7.14% — 28
PIPE	44.34% — 106

Typical support received by teachers from PIPE partners[2]
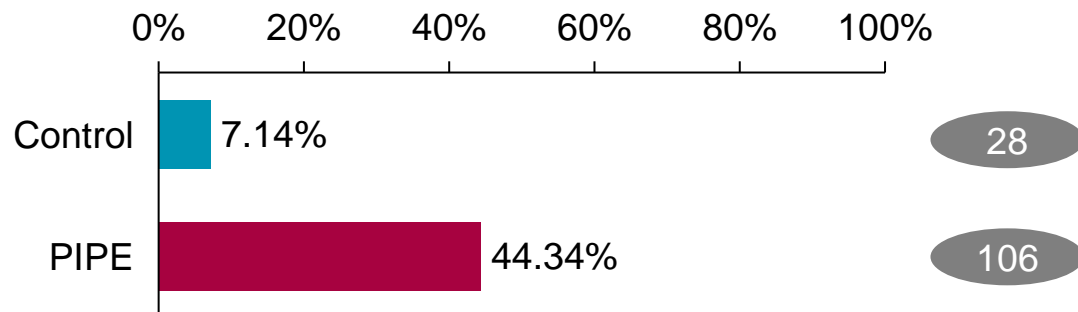
~2 group teacher training sessions per teacher per year

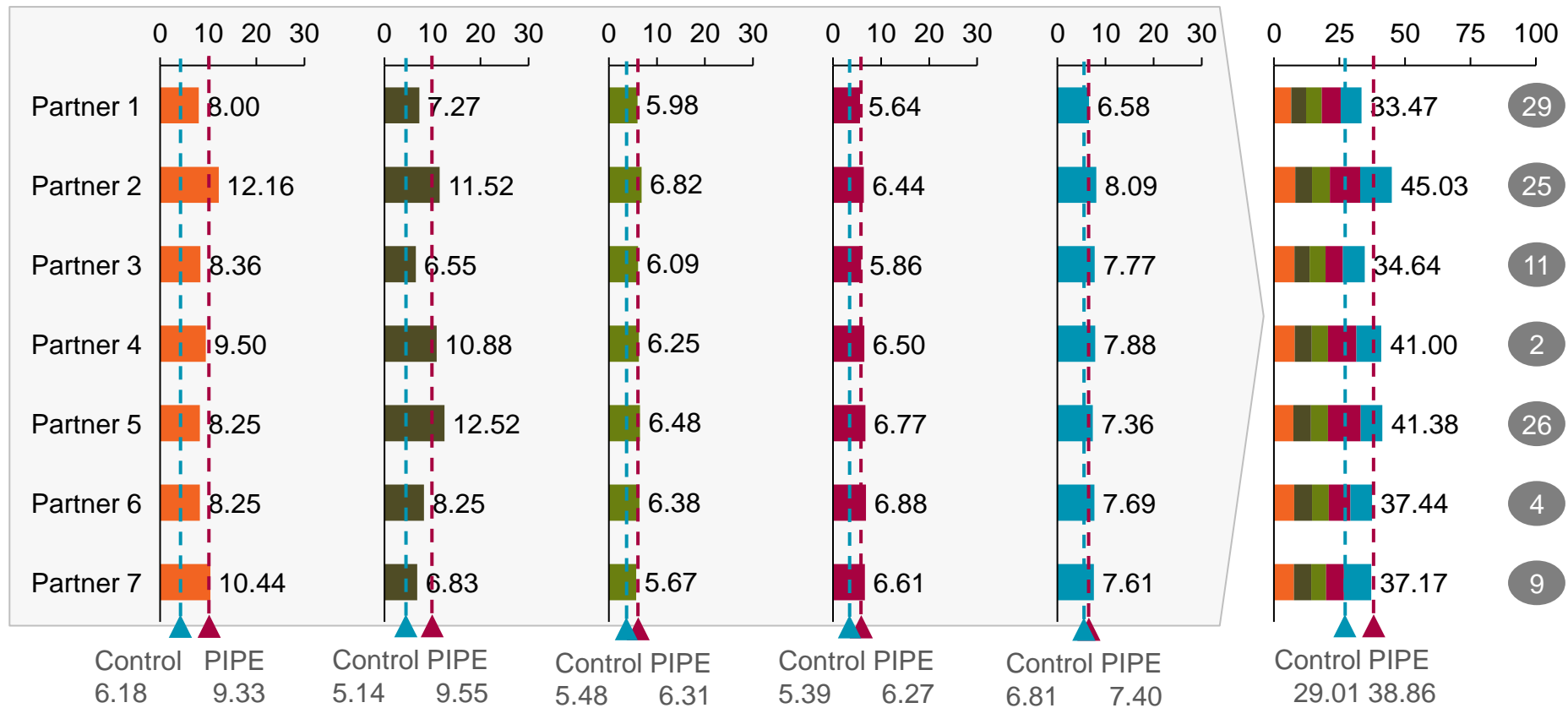~4 in-class observation and feedback sessions per teacher per year

On-demand remote support over call or WhatsApp through the academic year

1. Samples size: 28 teachers from Control APSs and 106 teachers from PIPE APSs | 2. Actual support may vary by solution providers

There is significant variance and potential for improvement amongst PIPE partners

	Learning outcomes Sr. KG (max 24)	Classroom environment[1] (max 27)	Teacher interview[2] (max 13.5)	Administrator Interview[3] (max 13.5)	Parent Interview[4] (max 20)	Total score/ partner (max 98)	
Partner 1	8.00	7.27	5.98	5.64	6.58	33.47	29
Partner 2	12.16	11.52	6.82	6.44	8.09	45.03	25
Partner 3	8.36	6.55	6.09	5.86	7.77	34.64	11
Partner 4	9.50	10.88	6.25	6.50	7.88	41.00	2
Partner 5	8.25	12.52	6.48	6.77	7.36	41.38	26
Partner 6	8.25	8.25	6.38	6.88	7.69	37.44	4
Partner 7	10.44	6.83	5.67	6.61	7.61	37.17	9

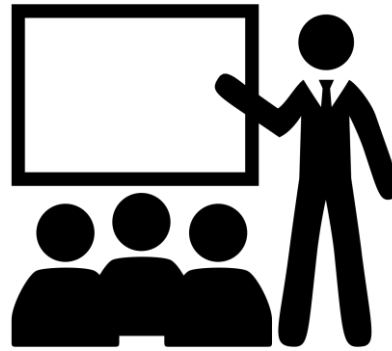|	Control	PIPE	Control	PIPE	Control	PIPE	Control	PIPE	Control	PIPE	Control	PIPE
	6.18	9.33	5.14	9.55	5.48	6.31	5.39	6.27	6.81	7.40	29.01	38.86

1. For a Sr. KG classroom | 2. Interview of one Sr. KG teacher | 3. Interview of 1 owner, principal or pre-primary principal |
4. Parents of Sr. KG children

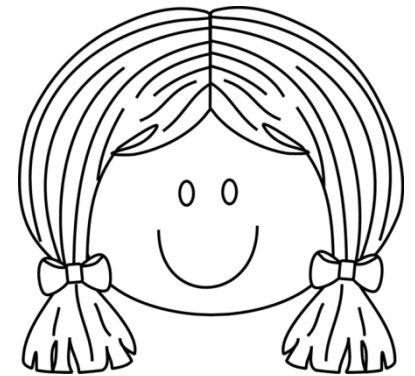# PIPE will therefore continue to…..

Support partners to serve 300,000 APSs

Educate APS administrators, teachers and parents on the benefits of ABL solutions

Improve quality of education for millions of children

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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

Please view in slide show mode. Please click on the image to open a video link. Requires internet connectivity

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
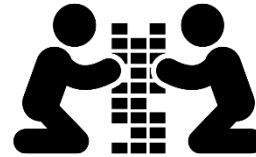
Mission	ABL solution providers **sell profitably and at scale** to APSs in India	ABL solution providers **make learning effective and enjoyable** for children	ABL solution providers **communicate the benefits of ABL** to stakeholders[1]
Goal by 2025	**A** **Scale supply:** 3 ABL solution providers serving >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

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

A

Goal

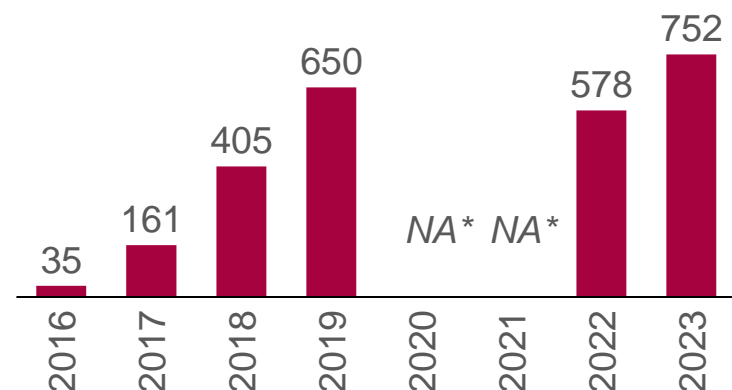3 ABL solution providers >500 APSs each

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 · 321 · Next Education · KARADI PATH EDUCATION COMPANY · CHIPPER SAGE · Gyan Shala · vikalp

# of APSs using PIPE partner solutions[1]

Year	Value
2016	35
2017	161
2018	405
2019	650
2020	NA*
2021	NA*
2022	578
2023	752

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

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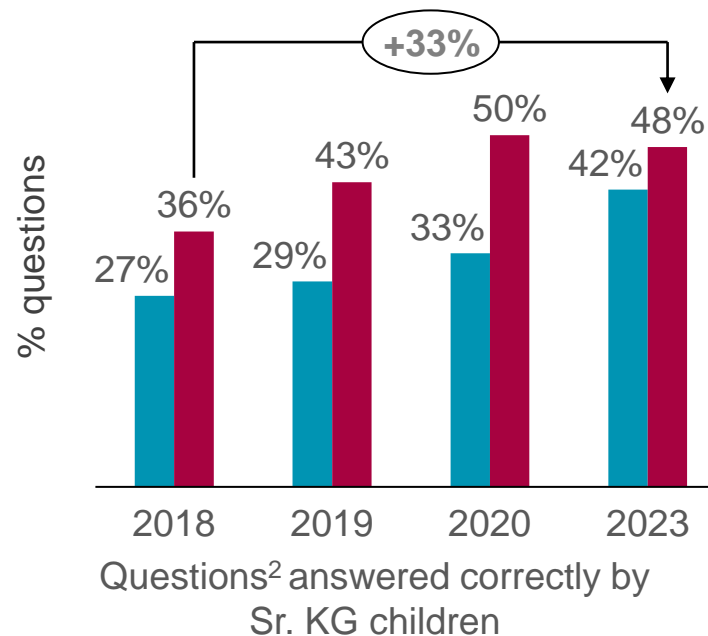
Goal

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

+33%

	2018	2019	2020	2023
Control APSs	27%	29%	33%	42%
PIPE APSs	36%	43%	50%	48%

% questions

Questions[2] answered correctly by Sr. KG children

■ Control APSs ■ PIPE APSs

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

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

C

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

Goal

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

Impact to date

Disseminated parent engagement videos to 100K+ parents

www. ratta-ya-samajh.com

% of APSs in Bangalore adopting ABL[1]

Year	Value
2015	0.2%
2016	2%
2017	4%
2018	7%
2019	NA*
2020	NA*
2021	8%
2022	12%

Note: bar chart shows 2015: 0.2%, 2017: 2%, 2018: 4%, 2019: 7%, 2020: NA, 2021: NA*, 2022: 8%, 2023: 12%*
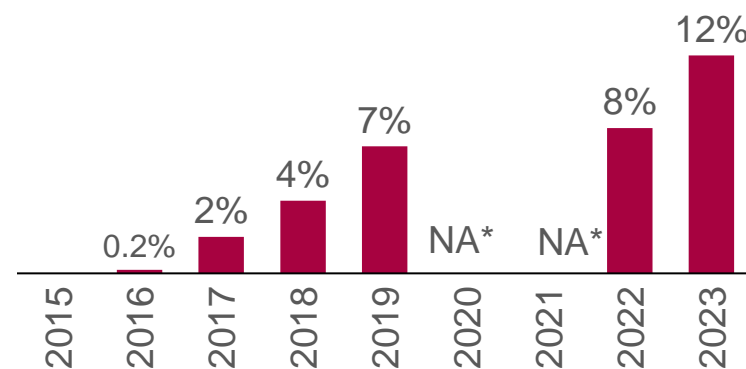
***as schools were closed due to COVID-19[2]*

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

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

D

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

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PIPE partners are doing better on all dimensions of classroom environment

Average score of all dimensions of classroom environment (out of 3)

Note: Scores on a scale of 0-3 (for more details on each dimension refer pages 43 and 44)
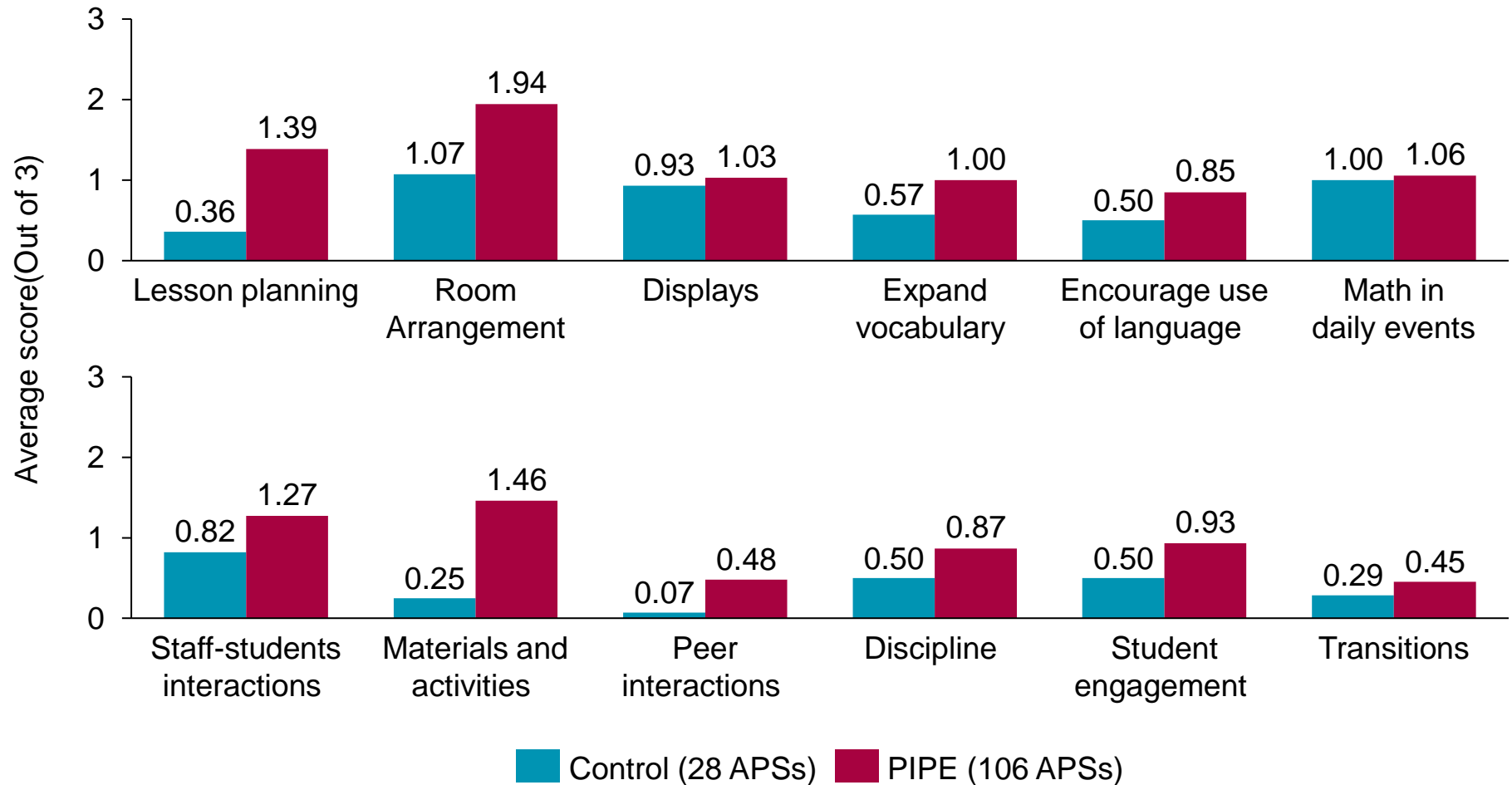
PIPE and control APSs performed better on classroom environment in 2019 as compared to 2018

Comparison of classroom environment score of PIPE & control APSs in 2018 and 2019
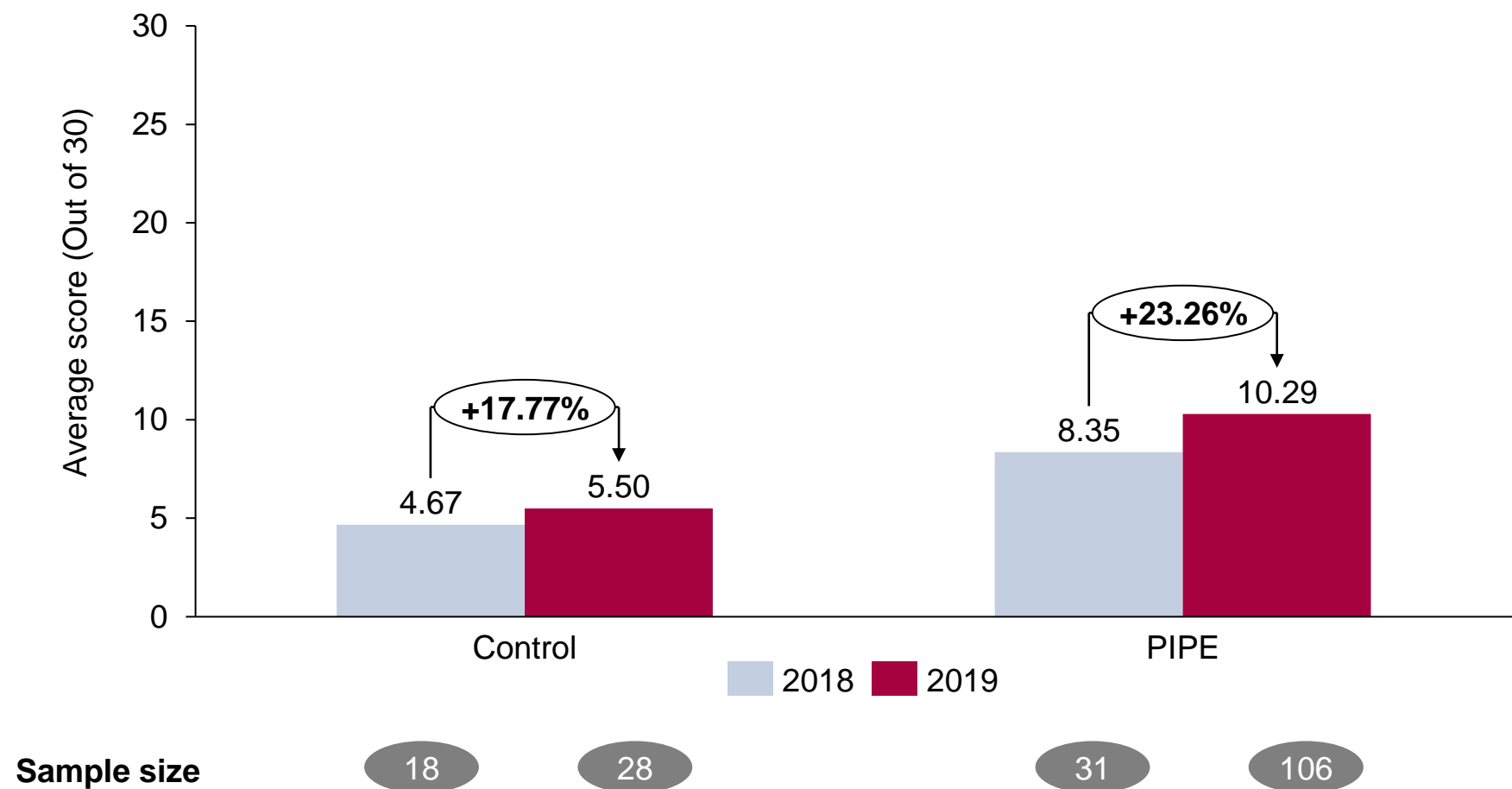
Note: Includes comparison of score (not normalized) of 10 dimensions of the classroom environment section that were assessed in 2018 and 2019 - room arrangement, displays, expand vocabulary, encourage use of language, staff-child interaction, materials and activities, peer interaction, discipline, student engagement and transitions. For details on each, refer to pages 43 and 44

PIPE and control APSs performed better on Sr. KG student learning outcome scores in 2019 as compared to 2018

Comparison of Sr. KG student outcomes score of PIPE & control APSs in 2018 and 2019

Average score (Out of 30)

Control: 2018 = 5.28, 2019 = 5.71, **+8.14%**

PIPE: 2018 = 7.26, 2019 = 8.64, **+19.01%**

Legend: 2018, 2019

Sample size
Control: 18, 28
PIPE: 31, 106
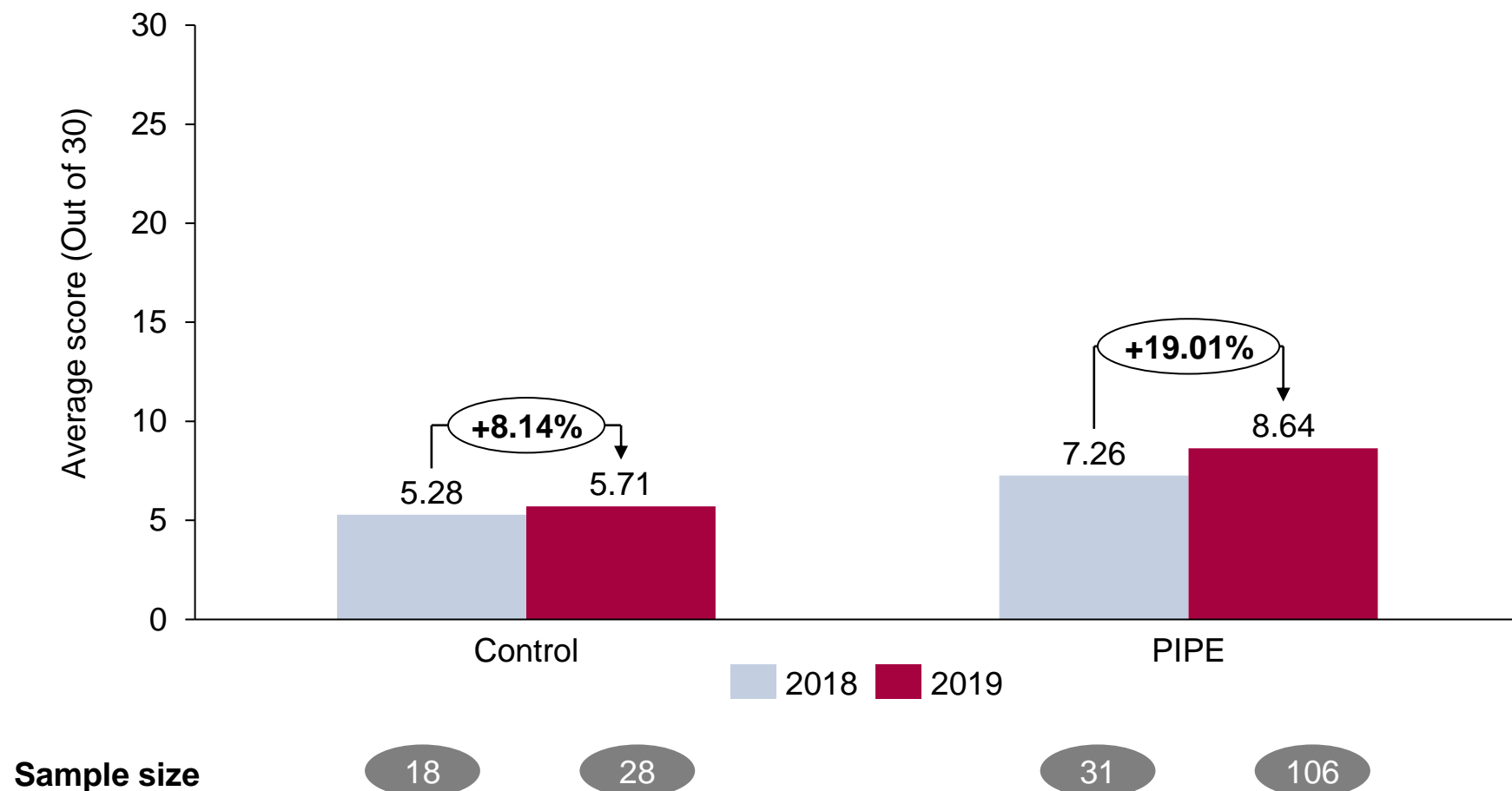
PIPE partners are doing better on all learning outcomes

Percentage of Sr. KG children that answered each question correctly

Percentage of Sr. KG children

Read PIN: Control 33%, PIPE 46%
Identified largest number from a group of 6 numbers: Control 18%, PIPE 30%
Could count and give 12 sticks from 20: Control 28%, PIPE 40%
Were able to form a simple sentence (e.g. girl playing) when shown a picture: Control 7%, PIPE 17%

Named 6+ animals: Control 36%, PIPE 57%
Solved a 4 piece puzzle: Control 12%, PIPE 17%
Solved simple abstract addition: Control 18%, PIPE 31%
Identified a circle-shaped object in their surrounding: Control 54%, PIPE 73%

■ Control (168 children)   ■ PIPE (636 children)

No significant variance was observed in learning outcome scores between boys and girls in Sr. KG

% of Sr. KG children that answered questions correctly (by gender)

Legend: % of boys (412 boys) ■ % of girls (392 girls)

Control: 27.05% (boys), 24.26% (girls)
PIPE: 39.09% (boys), 39.31% (girls)
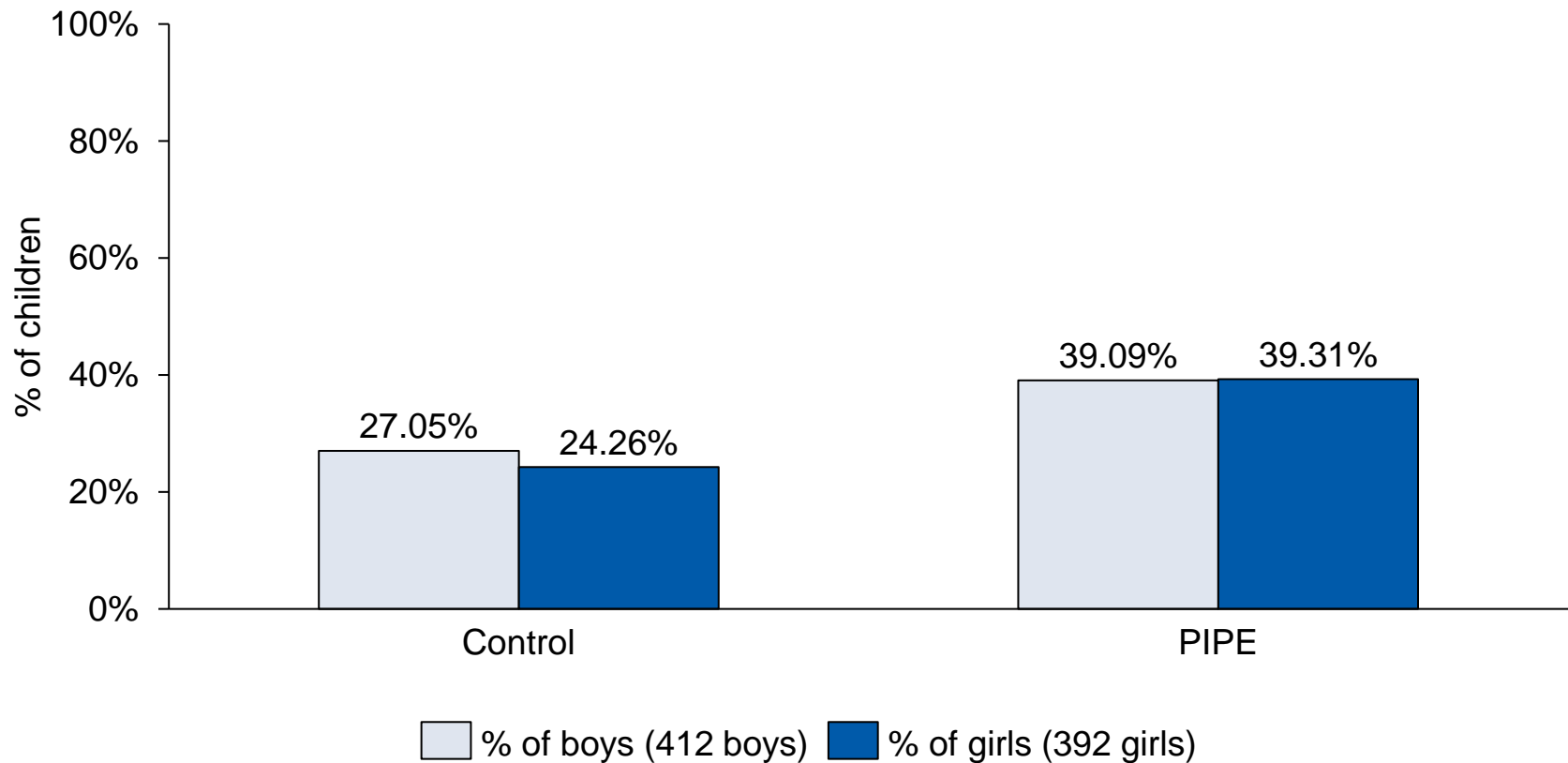
No significant variance in English learning outcomes was observed in grade 2 children across PIPE and control schools

% of grade 2 children that answered each question correctly

Question	Control	PIPE
Could not identify 5 letters	1.44%	1.92%
Identified 5 letters	98.56%	98.08%
Read 5 words	59.00%	61.42%
Read 4 sentences	30.94%	39.35%
Answered a simple question based on the 4 sentences	25.18%	31.67%
Read an entire story fluently	12.95%	11.13%

Control (139 children)
PIPE (521 children)

Average grade 2 children score on English (max 25)

Control: 11.25
PIPE: 11.88
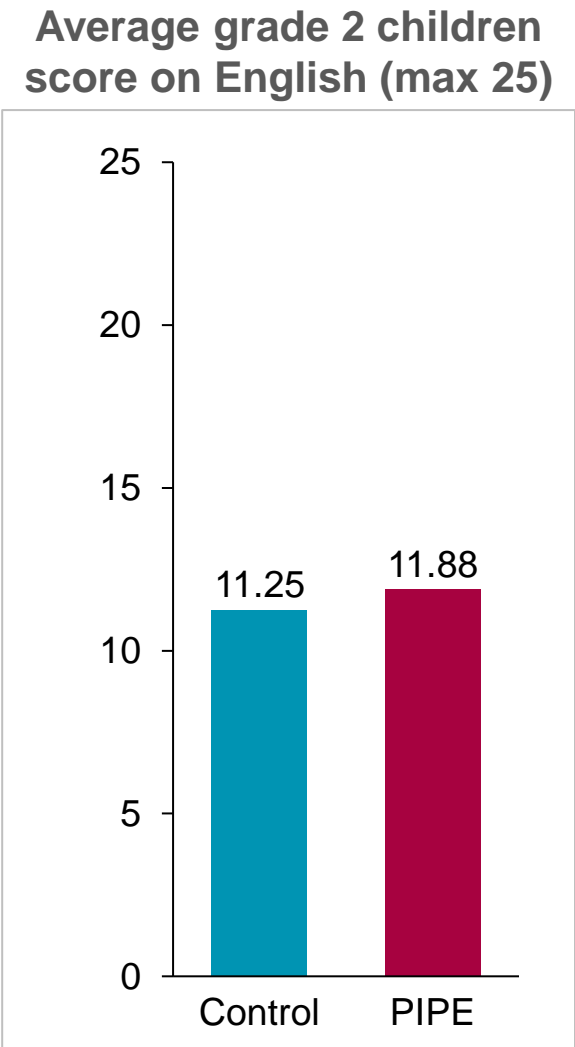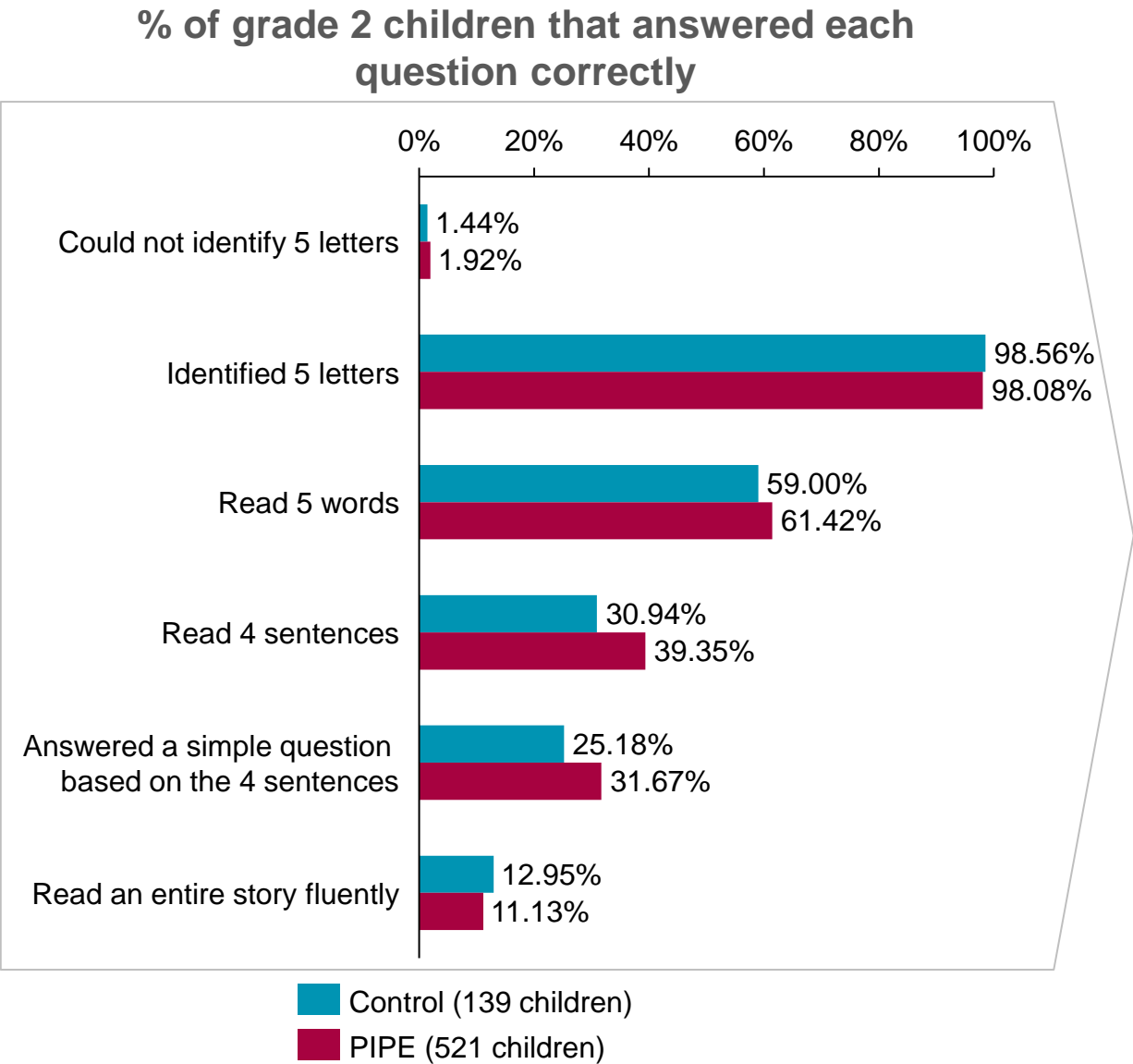
No significant variance in Math learning outcomes was observed in grade 2 children across PIPE and control schools

% of grade 2 children that answered each question correctly

Could not identify 4 numbers
- Control: 7.91%
- PIPE: 4.80%

Identified 4 numbers
- Control: 92.09%
- PIPE: 95.20%

Solved two single digit subtraction problems
- Control: 50.36%
- PIPE: 59.88%

Solved two doublt digit subtraction problems with carry forward
- Control: 4.32%
- PIPE: 12.28%

■ Control (139 children) ■ PIPE (521 children)

Average grade 2 children score on Math (max 15)

- Control: 7.29
- PIPE: 8.23
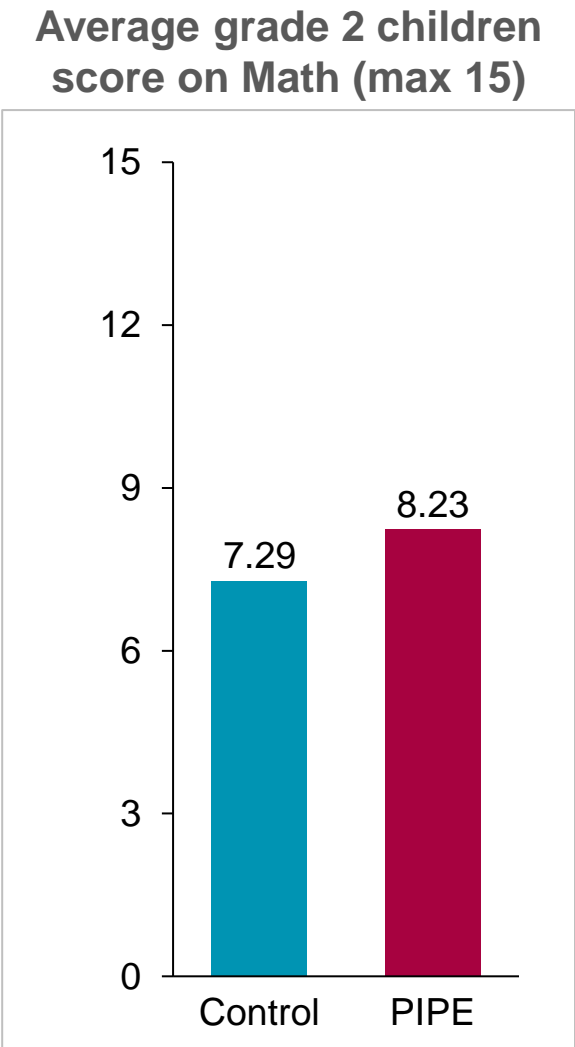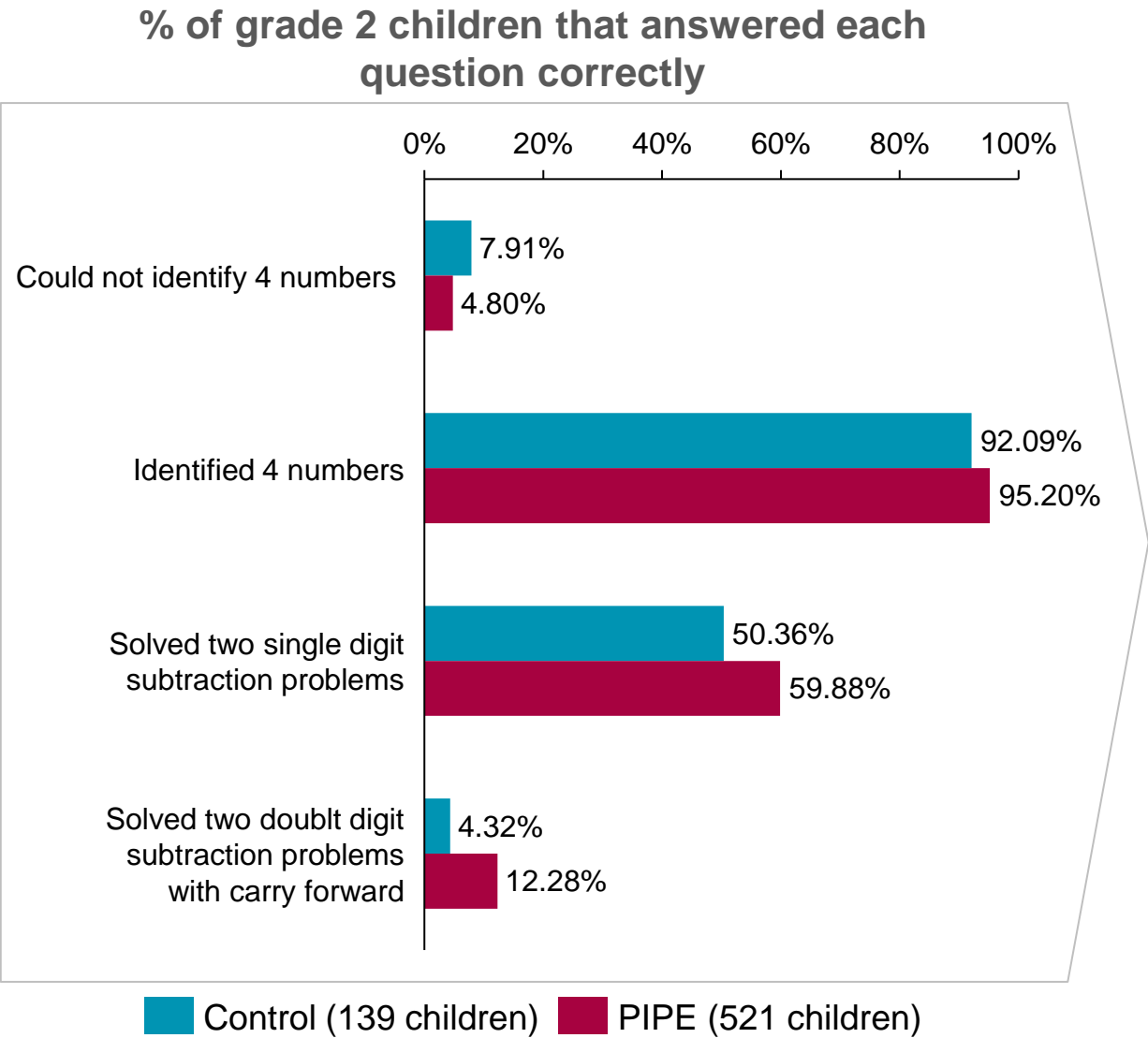
Number of boys and girls assessed in Sr. KG and grade 2 were similar

Total number of Sr. KG boys and girls assessed
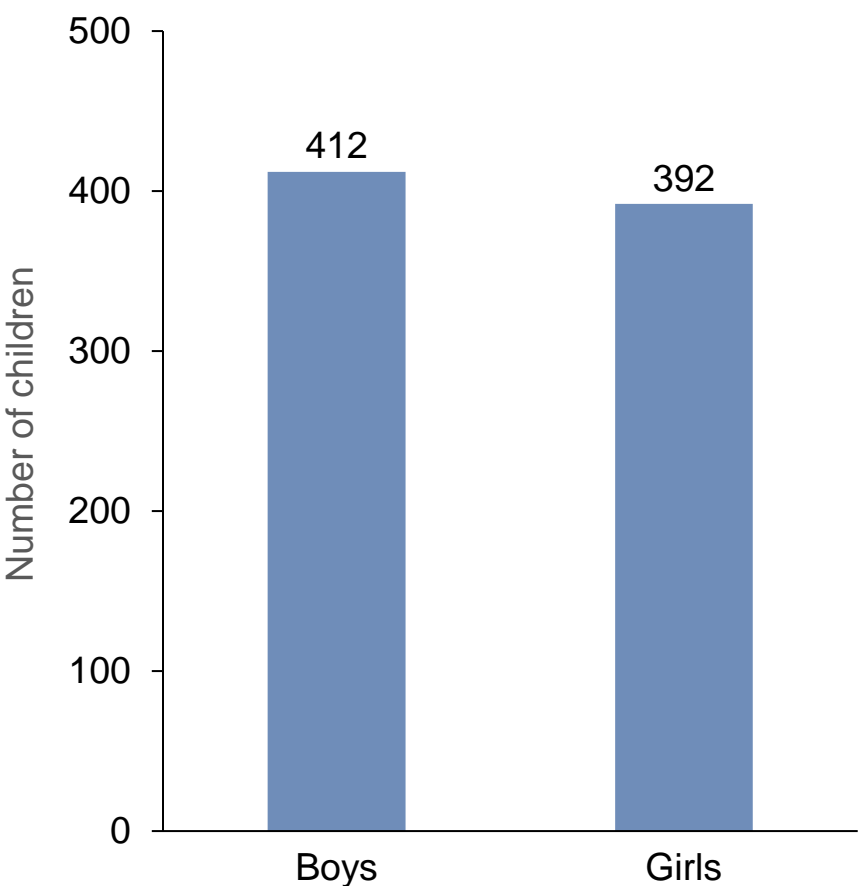
Total number of grade 2 boys and girls assessed
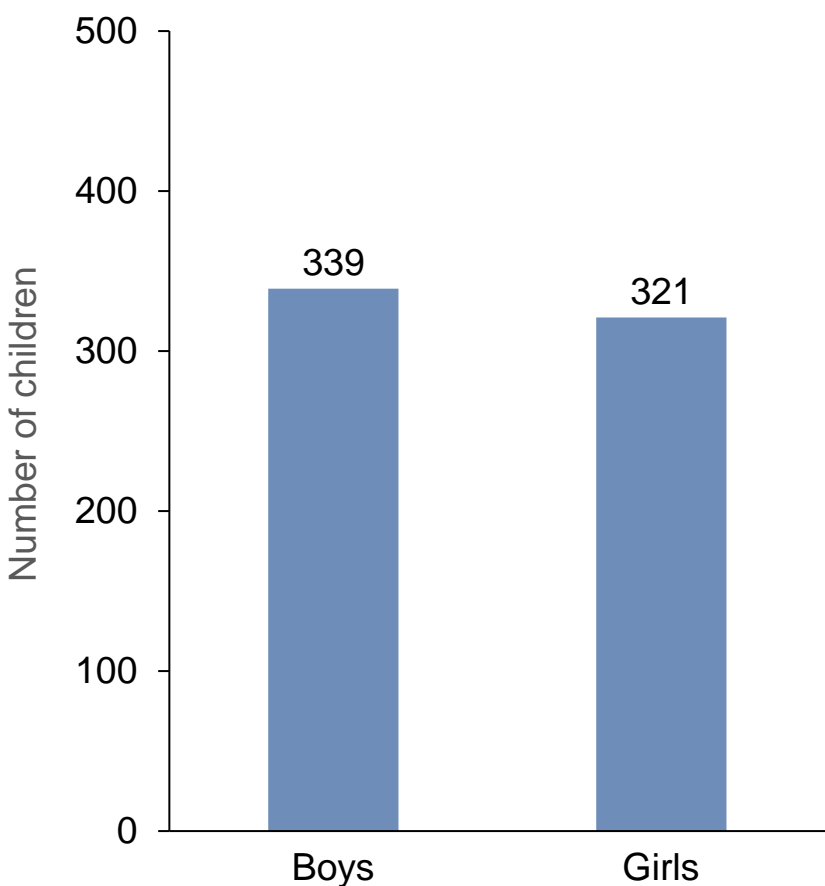
No significant variance was observed among schools in different years of implementation

Average score by year of implementation (Out of 98)

Legend:
- Classroom environment (27)
- Improved learning outcomes (24)
- Engaged Administrator (13.5)
- Capable teacher (13.5)
- Supportive home environment (20)

Year	Supportive home environment	Capable teacher	Engaged Administrator	Improved learning outcomes	Classroom environment	Total
Year 1	7.6	6.4	6.4	9.8	9.7	39.9
Year 2	7.1	5.9	5.9	7.7	8.5	35.0
Year 3	6.5	6.8	5.8	11.7	10.6	41.4
Year 4	8.5	6.6	6.8	10.4	12.8	45.0

Sample size

Year 1	Year 2	Year 3	Year 4
67	29	6	4

1. Total section score captured in brackets ()

No significant variance in scores were observed among administrators across PIPE and control APSs (1/2)

Average administrator score by question (Out of 3)
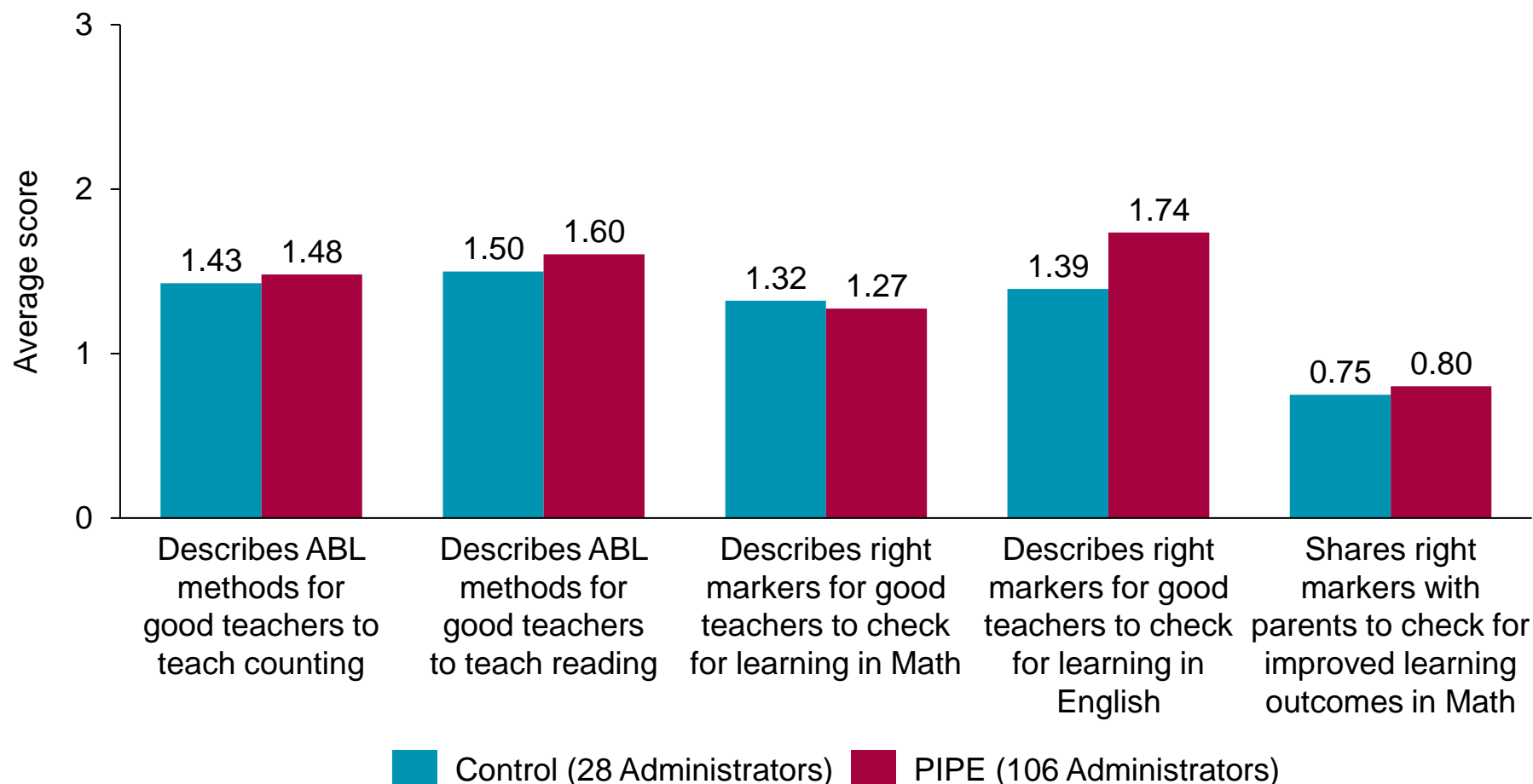
Note: The scores are not a judgement of an owners capability; but an assessment on awareness of (i) play based approaches to teaching concepts, (ii) markers that assess understanding learning on key concepts, (iii) how parents can assess learning at home

No significant variance in scores were observed among administrators across PIPE and control APSs (2/2)

Average administrator score by question (Out of 3)
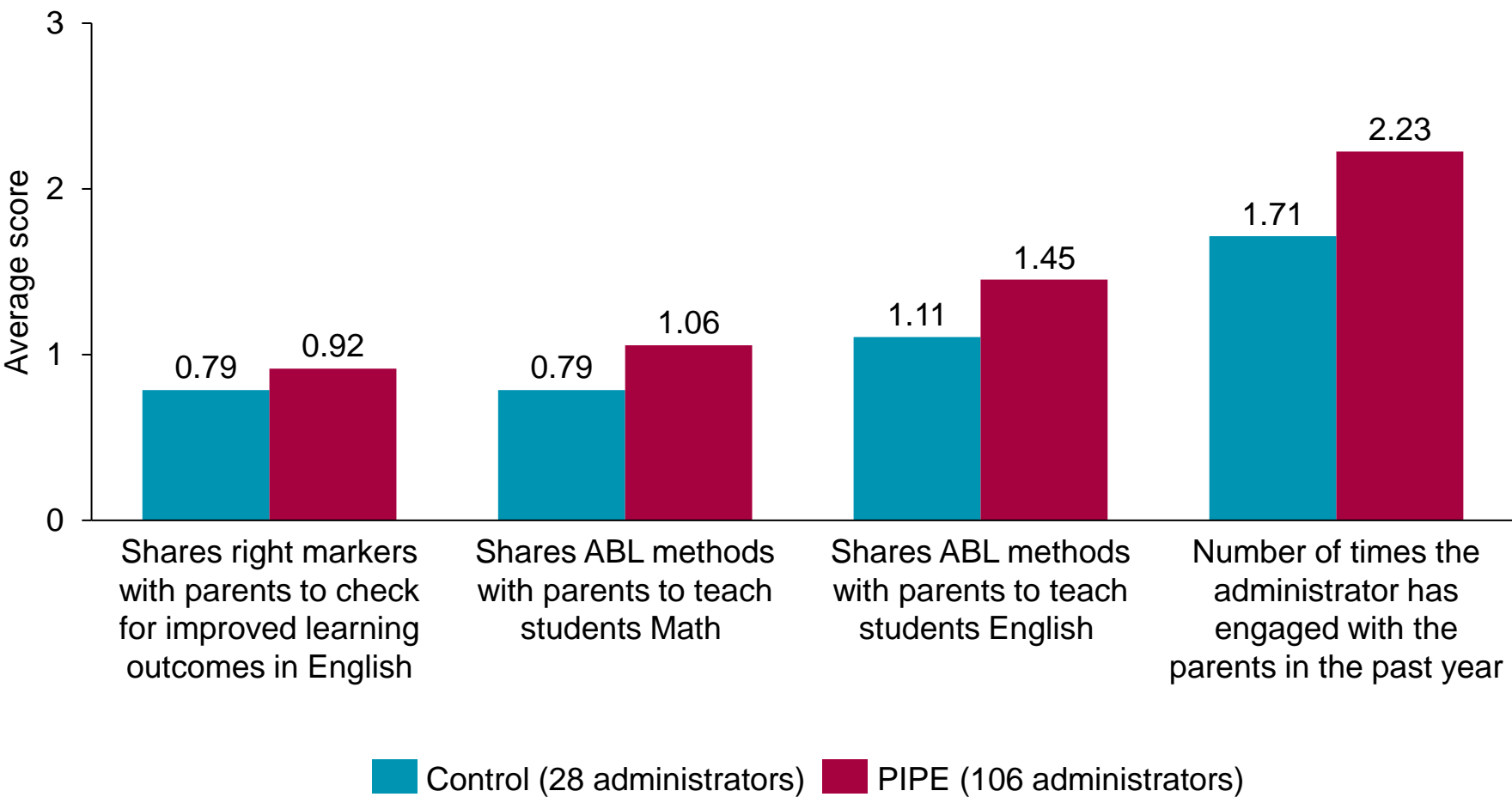
Control (28 administrators)   PIPE (106 administrators)

Question	Control	PIPE
Shares right markers with parents to check for improved learning outcomes in English	0.79	0.92
Shares ABL methods with parents to teach students Math	0.79	1.06
Shares ABL methods with parents to teach students English	1.11	1.45
Number of times the administrator has engaged with the parents in the past year	1.71	2.23

Note: The scores are not a judgement of an owners capability; but an assessment on awareness of (i) play based approaches to teaching concepts, (ii) markers that assess understanding learning on key concepts, (iii) how parents can assess learning at home

No significant variance in scores were observed among teachers across PIPE and control APSs (1/2)

Average teacher score by question (Out of 3)

Legend:
- Control (28 teachers)
- PIPE (106 teachers)

Question	Control	PIPE
Describes ABL methods to teach students counting numbers 11-20	1.18	1.46
Describes ABL methods to teach students addition	1.43	1.32
Describes ABL methods to teach students to read three-letter word	1.50	1.82
Describes right markers to check for learning in Math	1.21	1.40
Describes right markers to check for learning in English	1.50	1.66

Note: The scores are not a judgement of a teachers capability; but an assessment on awareness of (i) play based approaches to teaching concepts, (ii) markers that assess understanding learning on key concepts, (iii) how parents can assess learning at home

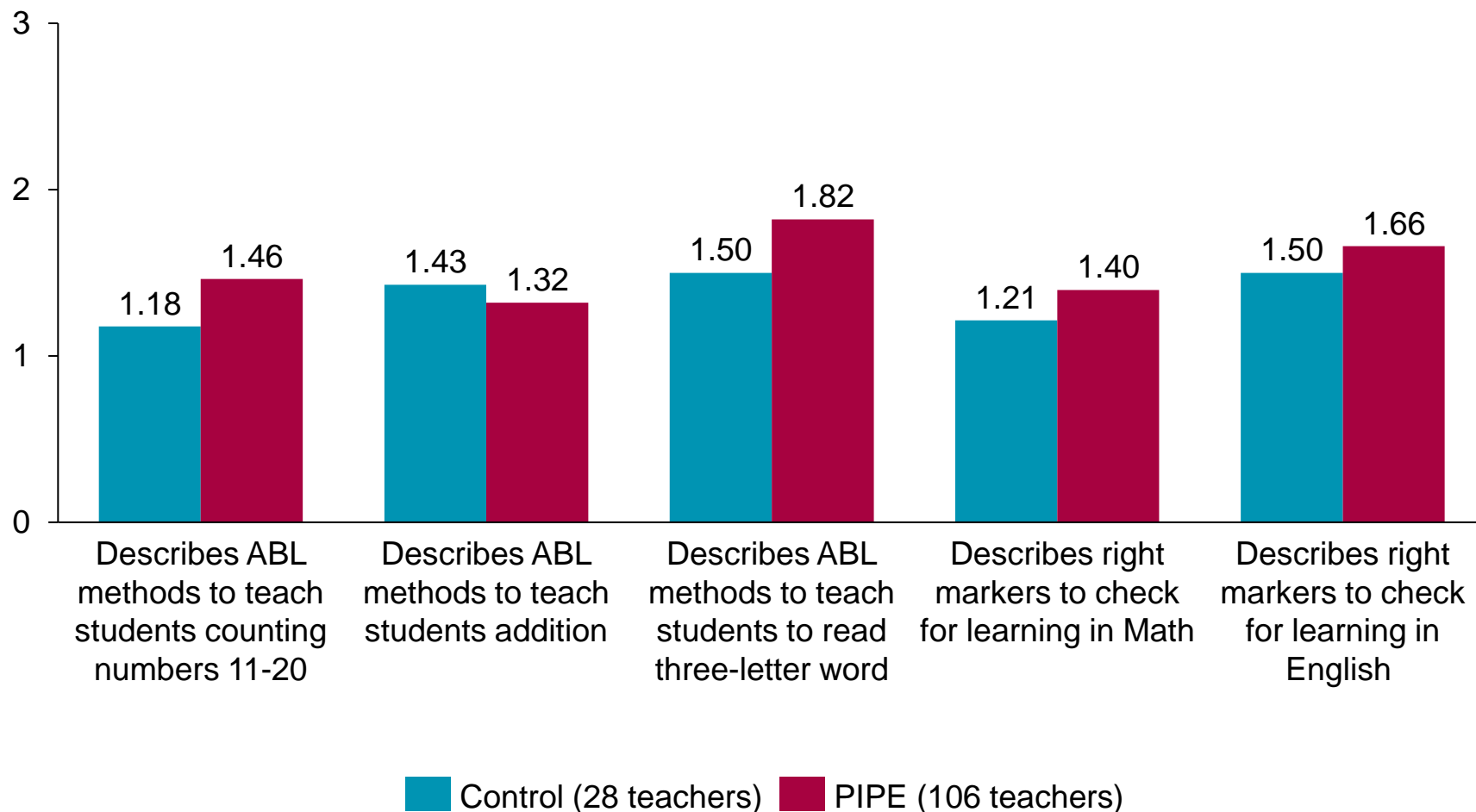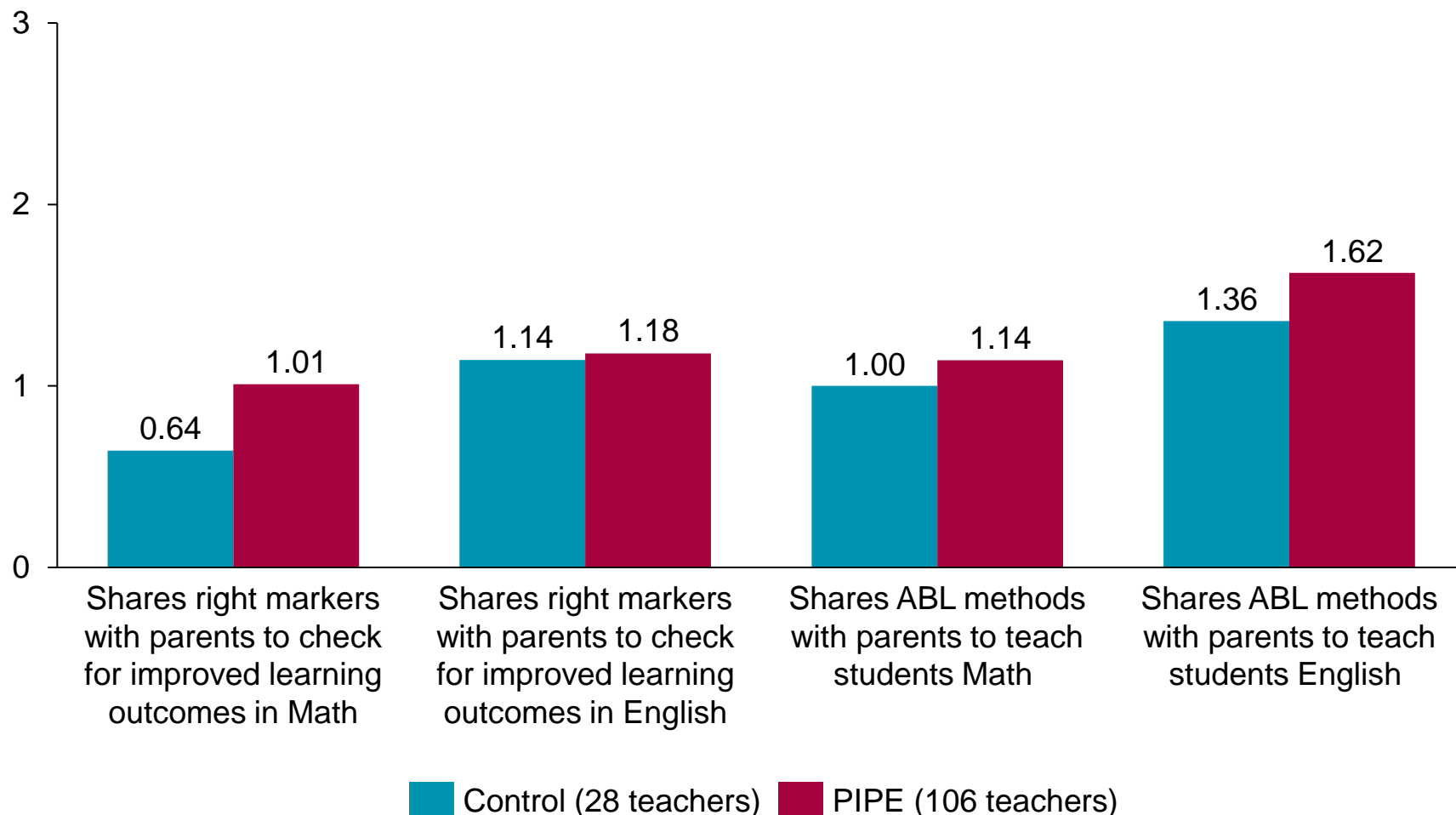# No significant variance in scores were observed among teachers across PIPE and control APSs (2/2)

Average teacher score by question (Out of 3)

Legend:
- Control (28 teachers)
- PIPE (106 teachers)

Data:
Question	Control	PIPE
Shares right markers with parents to check for improved learning outcomes in Math	0.64	1.01
Shares right markers with parents to check for improved learning outcomes in English	1.14	1.18
Shares ABL methods with parents to teach students Math	1.00	1.14
Shares ABL methods with parents to teach students English	1.36	1.62

Note: The scores are not a judgement of a teachers capability; but an assessment on awareness of (i) play based approaches to teaching concepts, (ii) markers that assess understanding learning on key concepts, (iii) how parents can assess learning at home

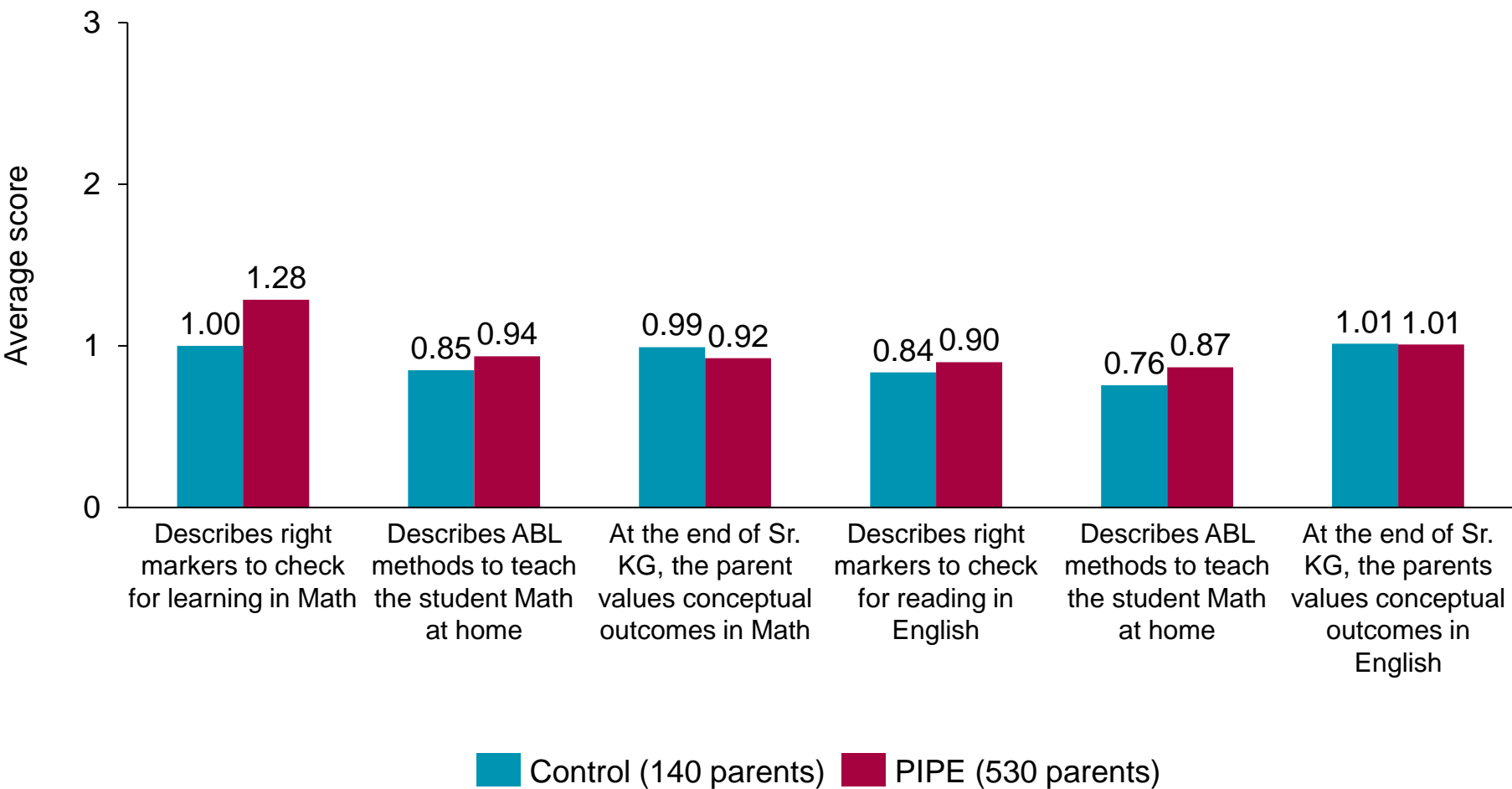# No significant variance in scores were observed among parents across PIPE and control APSs

Average parent score by question (Out of 3)

Control (140 parents)　PIPE (530 parents)

Question	Control	PIPE
Describes right markers to check for learning in Math	1.00	1.28
Describes ABL methods to teach the student Math at home	0.85	0.94
At the end of Sr. KG, the parent values conceptual outcomes in Math	0.99	0.92
Describes right markers to check for reading in English	0.84	0.90
Describes ABL methods to teach the student Math at home	0.76	0.87
At the end of Sr. KG, the parents values conceptual outcomes in English	1.01	1.01

Note: The scores are not a judgement of a parents capability; but an assessment on awareness of (i) markers that assess understanding learning on key concepts, (iii) how they can assess and support learning at home
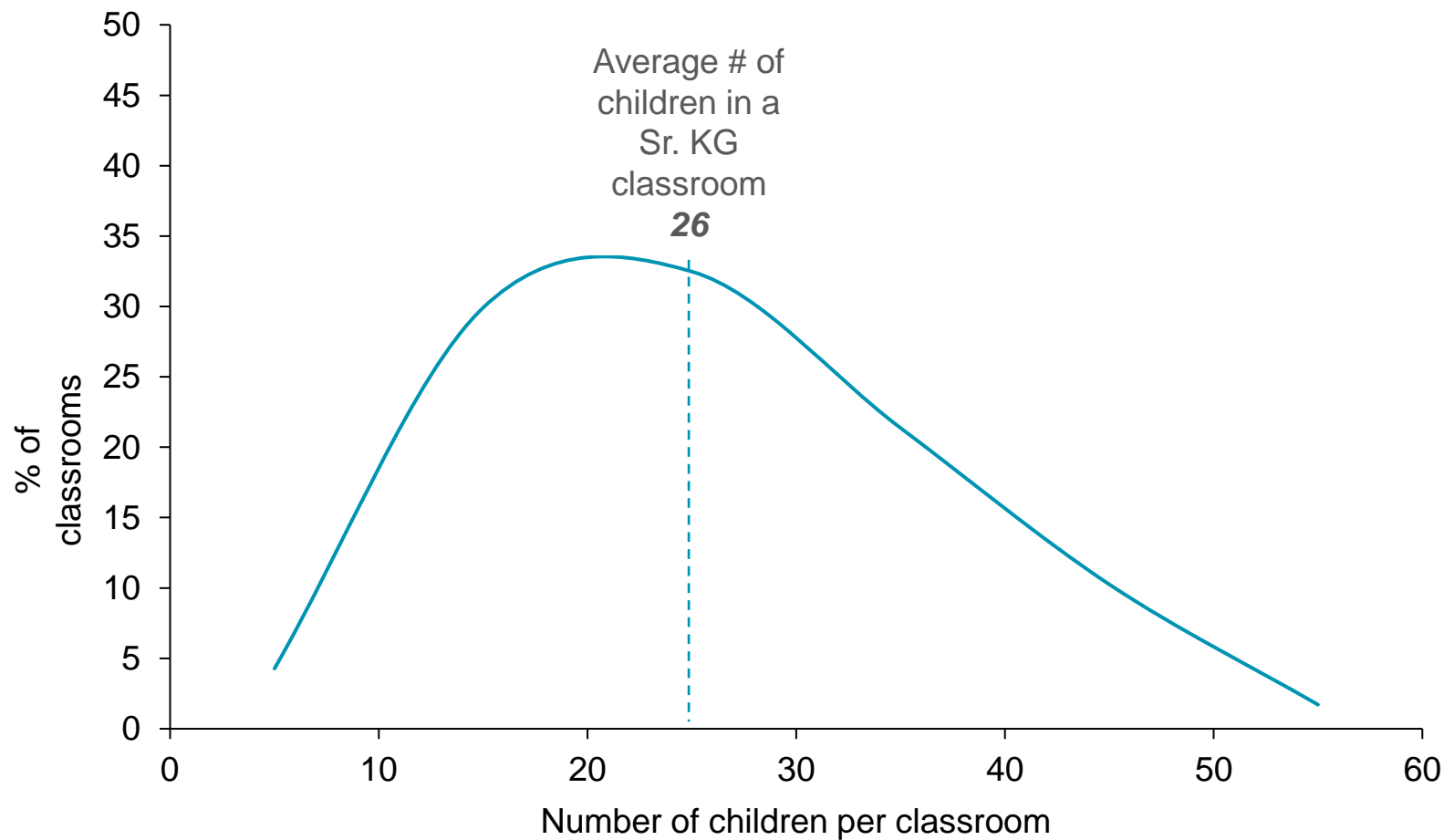
Most PIPE and Control APSs have 1 Sr. KG section

Spread of APSs by number of Sr. KG section(s)

>3 Sr. KG sections — 12%

3 Sr. KG sections — 4%

2 Sr. KG sections — 18%

1 Sr. KG section — 65%
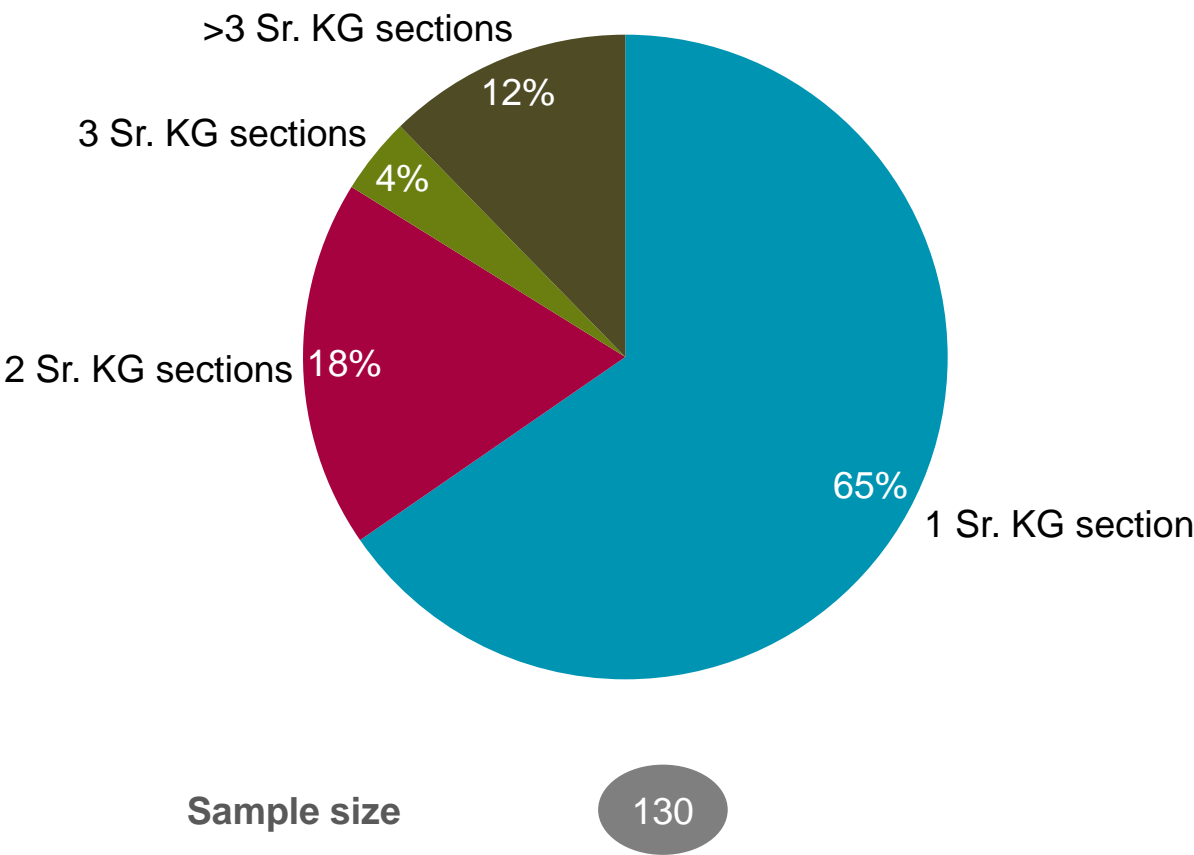
Sample size 130

There are an average of ~26 children per Sr. KG classroom

Average number of children[1] per Sr. KG classroom

Average # of children in a Sr. KG classroom
26

% of classrooms

Number of children per classroom

Sample size

117

Average age of a Sr. KG child is 5.40 and that of grade 2 child is 7.75

% of Sr. KG children by age

- 8 years old
- 7 years old
- 4 years old 2.48%
- 2.73%
- 0.62%
- 6 years old 35.69%
- 5 years old 58.46%
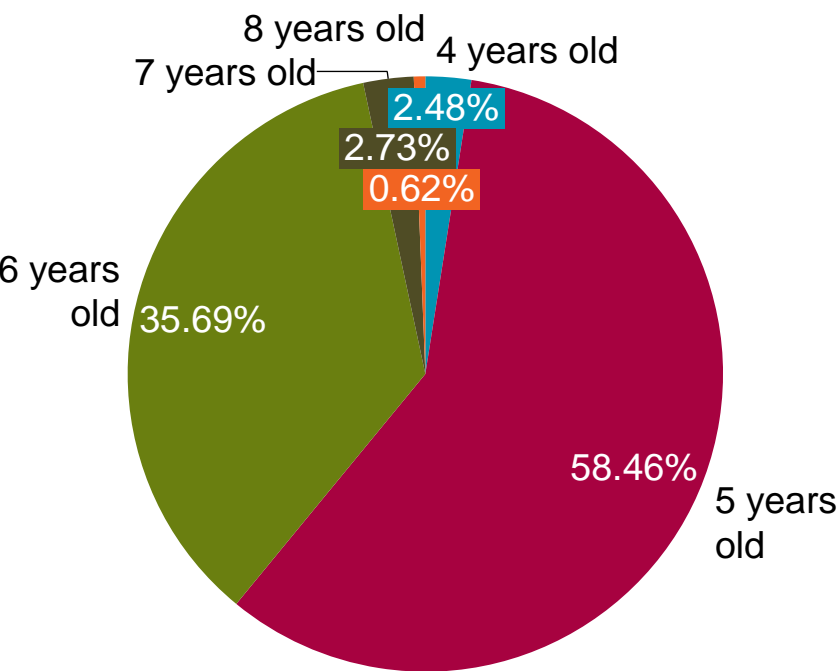
Average age 5.40

Sample size 804

% of Grade 2 children by age

- 10 years old
- 12 years old
- 9 years old
- 6 years old 1.52%
- 10.76%
- 1.06%
- 0.15%
- 7 years old 35.76%
- 8 years old 50.76%

Average age 7.75
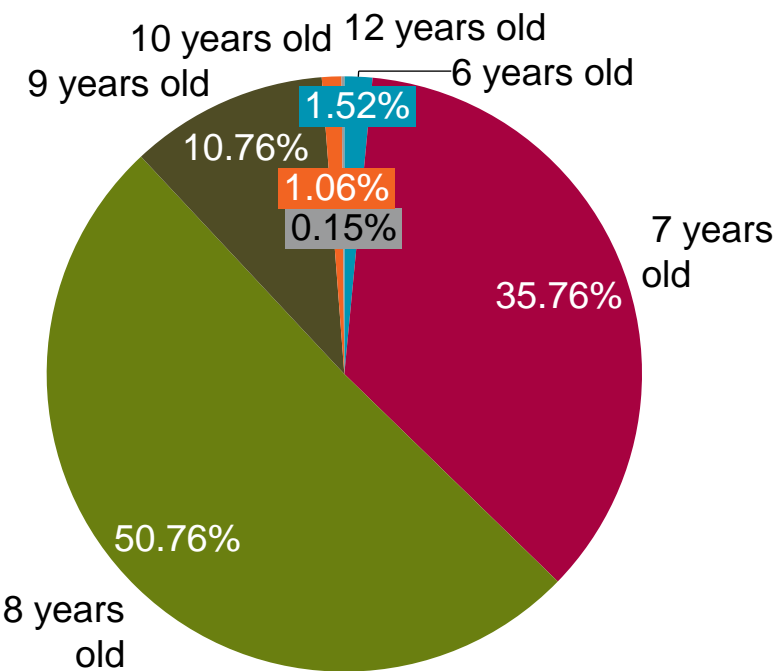
Sample size 660
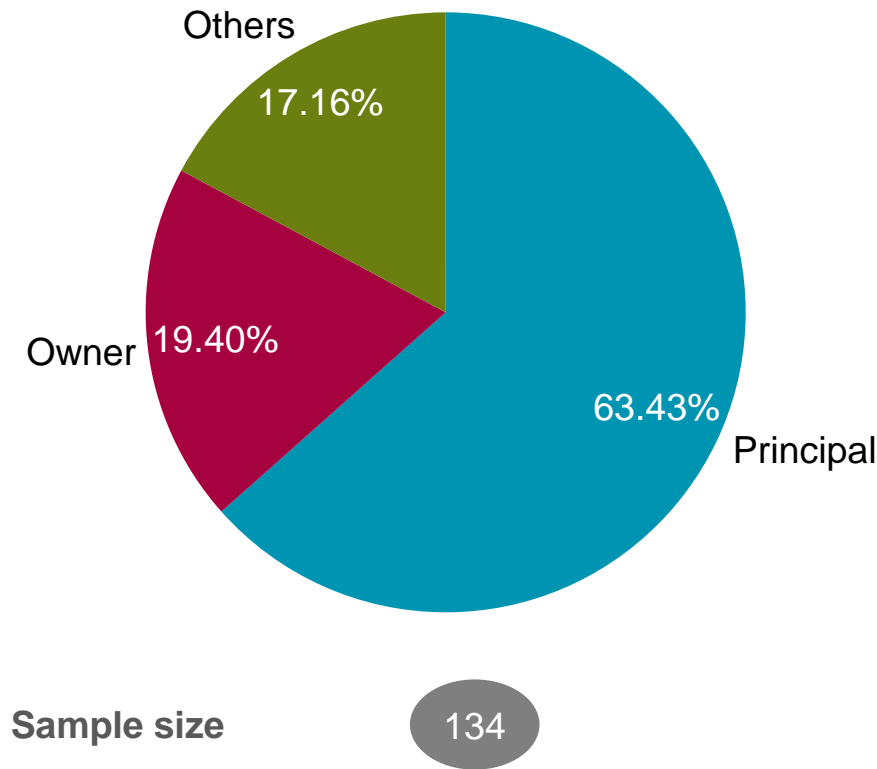
Principals and owners were predominantly interviewed for the administrator section

Spread by role of administrator

- Others: 17.16%
- Owner: 19.40%
- Principal: 63.43%

Sample size 134

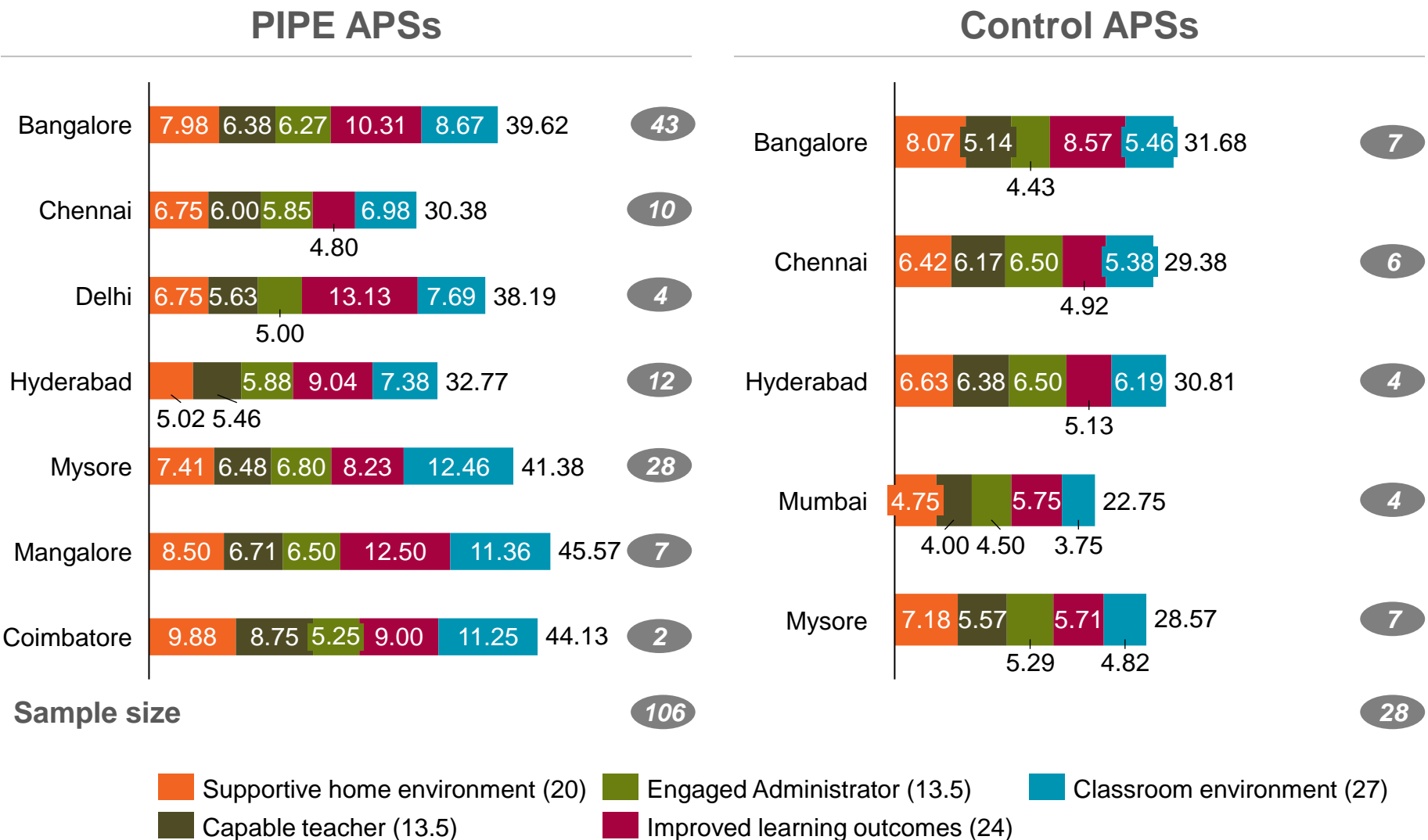Note: Others refers to pre-primary principal, vice principal, school coordinators, in-charge, trustee, management, secretary, etc.

Mothers were predominantly interviewed for the parent section

Spread of parents interviewed (by relationship)

Others
3%

Father
17%

80%

Mother

Sample size 670
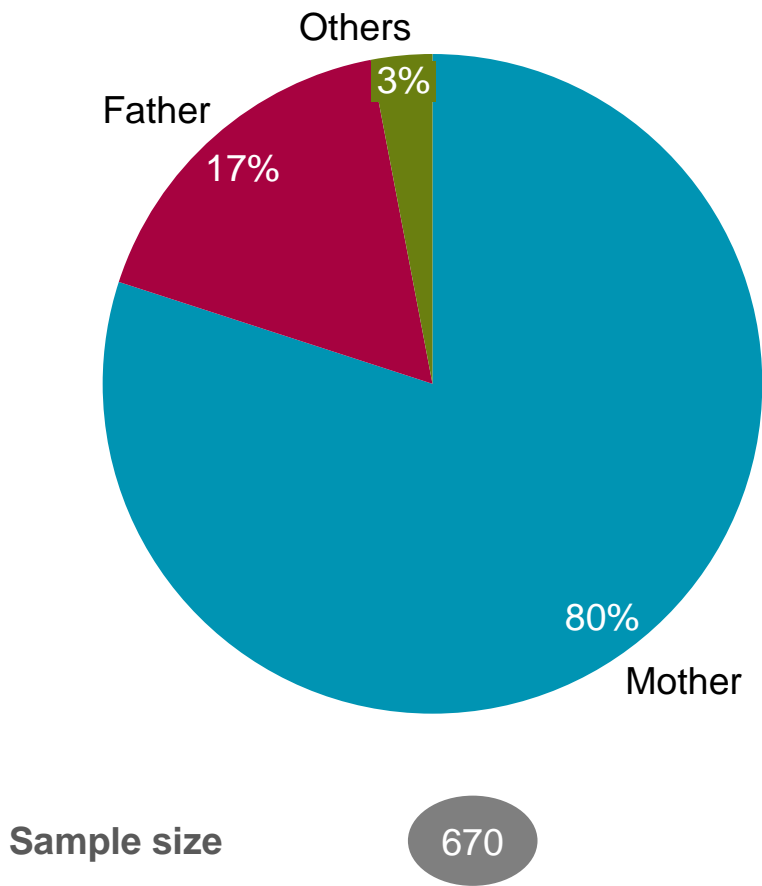
Note: Others include grandparents, uncle, aunt or sisters

There is variance in scores amongst cities

PIPE APSs

City	Supportive home environment (20)	Capable teacher (13.5)	Engaged Administrator (13.5)	Improved learning outcomes (24)	Classroom environment (27)	Total	Sample
Bangalore	7.98	6.38	6.27	10.31	8.67	39.62	43
Chennai	6.75	6.00	5.85	4.80	6.98	30.38	10
Delhi	6.75	5.63	5.00	13.13	7.69	38.19	4
Hyderabad	5.02	5.46	5.88	9.04	7.38	32.77	12
Mysore	7.41	6.48	6.80	8.23	12.46	41.38	28
Mangalore	8.50	6.71	6.50	12.50	11.36	45.57	7
Coimbatore	9.88	8.75	5.25	9.00	11.25	44.13	2

Sample size 106

Control APSs

City	Supportive home environment (20)	Capable teacher (13.5)	Engaged Administrator (13.5)	Improved learning outcomes (24)	Classroom environment (27)	Total	Sample
Bangalore	8.07	5.14	4.43	8.57	5.46	31.68	7
Chennai	6.42	6.17	6.50	4.92	5.38	29.38	6
Hyderabad	6.63	6.38	6.50	5.13	6.19	30.81	4
Mumbai	4.75	4.00	4.50	5.75	3.75	22.75	4
Mysore	7.18	5.57	5.29	5.71	4.82	28.57	7

Sample size 28

Legend:
- Supportive home environment (20)
- Capable teacher (13.5)
- Engaged Administrator (13.5)
- Improved learning outcomes (24)
- Classroom environment (27)

1. Overall total score for STARS is 98

Details on classroom environment dimensions observed (1/2)

Topic	0	1	2	3
Lesson planning	No plan available *(or)* Time table available	Plan available without detailed steps and/or materials required (e.g. "phonics for A-E", "counting 11-15")	Plan available with -Steps to follow -Materials required *(and)* Teacher follows plan	Teacher articulates learning objectives *(or)* Teacher checks for learning outcomes in at least one way
Room arrangement	Most of the classroom area is so crowded that learning activities cannot be conducted *(and)* There are no alternate spaces available to conduct activities	The class/ alternate space is crowded but at least one area has been organized where at least one learning activity can be conducted (e.g. benches moved slightly to make room in the front)	The class/ alternate space is organized such that two or more learning activities can be conducted *(and)* The teacher can supervise most children	Children are observed using the space for more than one activity
Displays	There are no relevant displays (e.g. alphabets, numbers, weather charts, shapes, posters about transport, my body) on the classroom walls	Relevant materials are displayed on the classroom wall	Relevant materials are displayed on the classroom wall and referred to at least twice (by teacher or children)	Children's artwork displayed on the wall
Expand vocabulary	Teacher may use new words but does not introduce them with an explanation	Teacher introduces 1-2 new words with minimal explanation (e.g. for the word "nib"; the teacher states "the pen has a nib")	Teacher introduces 1-2 new words and correctly explains their meanings (e.g. for the word "nib", the teacher (i) shows a pen, (ii) points to the nib; (iii) provides explanation about the object)	Teacher exposes children to language by (any of the below): • Using adjectives or descriptions • Using multiple scenarios or examples to explain something • Telling stories/ anecdotes
Encourage use of language	Majority of questions are rote based (i.e. have specific one or two word responses) or yes/ no answers *(and)* Talking among children or with staff is not encouraged	Staff asks at least two open-ended questions during the observation (e.g. questions that begin with how, what if, why, tell me about)	Staff responds positively to children's communication and encourages them to talk more	Staff child conversations go beyond classroom activities and materials (e.g. social talk about home and family life, activities in the community, feelings, other non-school topics)
Math in daily events	No reference to Math in daily events (e.g. "counting down", "You have 5 minutes to clean up", "There are 3 days remaining in the week", "We have 5 more minutes left in this period") *(or)* Conducts only formal Math lessons	One reference to Math in daily events during conversations or transitions	Two or more references to Math in daily events during conversations or transitions	Asks children questions to connect Math concepts to daily events (e.g. "How many papers will we need for this art activity?" "How many cups will fill up this bucket?" "How many days till the weekend?")
Staff-child interaction	Staff* is unresponsive or interacts negatively with children **Staff refers to all adults observed in classroom*	Whole class interactions between staff and children are positive	Staff interacts positively with some children individually by providing positive feedback/ reinforcement	Staff gives a message of warmth through actions (any of the below): • appropriate physical contact • respectful tone • showing sensitivity to children's needs

Details on classroom environment dimensions observed (2/2)

Topic	0	1	2	3
Materials and activities	No appropriate materials (e.g. flashcards) are used by teacher/ children *(Or)* Teacher uses materials/ conducts activities incorrectly (e.g. adopts rote approach when using flashcards)	At least one material is appropriately used by teachers to teach a concept	One material is appropriately used by children (individually, in pairs or small/large groups) to learn a concept *(and)* Staff asks children questions to test understanding or stimulate reasoning about that material/ activity/ concept	More than one material is appropriately used by children (individually, in pairs or small/large groups) to learn a concept *(and)* Staff asks children questions to test understanding or stimulate reasoning about more than one material/ activity/ concept
Peer interaction	There is no planned peer interaction* for children **Peer interaction refers to children engaging with each other in pairs and small/large groups*	Peer interaction is observed for less than 5 minutes	Peer interaction is observed for a total of at least 10 minutes	Peer interaction is observed for a total of at least 20 minutes *(and)* Staff guides children on positive interaction (e.g. sets tone like share materials, encourages use of social cues like say please, thank you)[#]
Discipline	Class is poorly managed with no norms, routines or expectations made visible or used *(or)* Severe forms of discipline are used (e.g. yelling, threatening)	Teachers use appropriate rules to manage class (e.g. Raise hands to ask or answer questions) *(and)* Staff does not hurt or intimidate children *(and)* One use of a norm/ routine is observed (e.g. Calling out "1-2-3" "Eyes on me")	Children appear to be aware of class rules and expectations (e.g. children clean up after activity is done) *(and)* Expectations are reinforced gently and positively *(and)* 2 different norms/ routines are observed	Staff tries to involve children in solving their conflicts and problems
Student engagement	Half the children are disengaged for most of the time *(or)* Children are only participating in rote or whole group recitation/ repetition	At least 75% of the children are on task and paying attention for most of the time	Children participate in small group (3-6 children) activities *(and)* Teacher observes when children are disengaged and attempts to bring them back on task	Some children ask questions in class
Transitions	Transitions* are chaotic or abrupt (e.g. staff not prepared, materials not ready, children required to wait) **Transition: A period of time when children are moving from one activity/ lesson to the next*	Transitions involve a wind-down or closure of the previous activity *(and)* an introduction to the next activity *(and)* Teacher takes more than 3 minutes to organize	Transitions involve a wind-down or closure of the previous activity *(and)* an introduction to the next activity *(and)* Teacher takes less than 3 minutes to organize	Teachers actively engage children during transitions

Administrator interview questions (1/8)

Question	0	1	2	3

According to you, how does a good teacher teach counting? Can you give examples?
 	
(Prompt "any more" once)
	Mentions one or more of the following:
	Ask child to:
	  • Repeat (e.g. rhymes, numbers)
	  • Write (numbers, names)
	• Unsure/ unaware
		Mentions one or more of the following:
		• Flash cards
		• Draw and count on blackboard
		• Demo by teacher using materials/ students
		• Use smartboard
			Mentions one of the following:
			• Students use materials (e.g. sticks, beans, pencils, beads, abacus)
			• Play games (e.g. snakes and ladders)
				Mentions two or more of the following:

According to you, how does a good teacher teach reading? Can you give examples?
 	
(Prompt "any more" once)
	Mentions one or more of the following:
	• Write
	• Memorize word spellings
	• Unsure/unaware
		Mentions one of the following:
		• TLMs (e.g. flash cards, word-wheel, posters)
		• Family words (e.g. 'ad', 'og', 'at', 'in')
		• Sight words
			Mentions two or more of the following OR one in column 3:	*Mentions two or more of the following:*
				Ask child to:
				  • Read stories in class
				  • Read simple words from newspaper/ story book
				• Phonics
				• Blending, segmenting

Question	0	1	2	3
How does a good teacher know if a child is learning Math? *(Prompt "Can you suggest more ways to check" once)*	***Mentions one or more of the following:*** Ask child to: • Recite1-100 • Write numbers • Write number names • Check test scores/report card • Unaware	***Mentions one of the following:*** Ask child to: • Identify numbers at random • Identify shapes • Count using objects (e.g. beads, fruits, vegetables) • Add or subtract • Recite tables	***Mentions two of the following OR one in column 3:***	***Mentions two or more of the following:*** Ask child to: • Fill missing numbers • Identify 'before-after' numbers • Compare quantities/ numbers (e.g. bigger/ smaller, less/ more than, largest/ smallest)

Question	0	1	2	3

How does a good teacher know if a child is learning English?
 	
(Prompt "any more" once)
	Mentions one or more of the following:
	Ask child to:
	  • Recite A-Z
	  • Recite rhymes
	  • Repeat after teacher
	  • Write alphabets
	• Check test scores/report card
	• Unsure/ unaware
		Mentions one of the following:
		Ask child to:
		  • Identify letters at random
		  • Match sounds with letters
		  • Write dictated alphabets / words / spellings
		  • Respond to simple questions (for e.g. "What is your name?")
		  • Use every day phrases like "good morning," "please," "thank you"
		  • Read familiar words taught in class (cat, bat, apple)
		  • Speak in English
			Mentions one of the following:
			Ask child to:
			  • Describe a picture in English/ Narrate a story/ event
			  • Read new words (e.g. in newspaper, story book, billboard)
			  • Match the word to the picture
			  • Follow instructions in English
			  • Name objects starting with a letter
			• Phonics
			• Blending of sounds
				Mentions two or more of the following:

Administrator interview questions (4/8)

Question	0	1	2	3

What do you tell them [parents] about how they can check learning in Math?
 	
(Prompt "any more ways to check" once)
 	
(Prompt "Give examples of homework" if the response is "Ensure homework is completed")
	Mentions one or more of the following:
	Check if child can:
	  • Recite 1-100
	  • Recite tables
	  • Copy numbers
	• Check report cards
	• Ensure homework is completed
	• Do nothing
		Mentions one of the following:
		
		Check if child can:
		  • Identify numbers at random
		  • Identify shapes
		  • Count using objects (e.g. beads)
		  • Add or subtract
			Mentions two of the following OR one in column 3:	***Mentions two or more of the following:***
				Check if child can:
				  • Fill missing numbers
				  • Identify 'before-after' numbers
				  • Compare quantities/ numbers (e.g. bigger/ smaller, less/ more than, largest/ smallest)

Administrator interview questions (5/8)

Question	0	1	2	3
What do you tell them [parents] about how they can check learning in English? *(Prompt "any more ways to check" once)* *(Prompt "Give examples of homework" if the response is "Ensure homework is completed")*	***Mentions one or more of the following:*** Check if child can: - Recite 1-100 - Recite tables - Copy numbers • Check report cards • Ensure homework is completed • Do nothing	***Mentions one or more the following:*** Check if child can: - Read words in the textbook - Identify letters - Identify colours/ animals/ vehicles - Speak in English	***Mentions one of the following:*** Check if child can: - Read "new" words - Describe a picture/ event/ story with some English - Match sounds with letters - Identify sounds of letters/ phonics - Respond in English to new questions (e.g. "What did you learn in school?")	***Mentions two or more of the following***

Administrator interview questions (6/8)

Question	0	1	2	3

What do you tell them [parents] about how they can help their child learn Math at home?
 	
(Prompt "any more" once)
 	
(Prompt "Give examples of homework" if the response is "Ensure homework is completed")
	Mentions one or more of the following
	Ask child to:
	   • Recite numbers
	   • Copy numbers
	• Check report cards
	• Send to tuitions
	• Ensure homework is completed
	• Do nothing
		Mentions one of the following
		
		Ask child to:
		• Count objects
		• Identify shapes, etc.
		• Revise lesson taught at school
		• Add or subtract
			Mentions two or more of the following OR one in column 3	***Mentions two or more of the following***
				Ask child to:
				• Arrange currency in order of value
				• Word problems for addition/ subtraction
				• Play simple games (e.g. snakes and ladders)
				• Teach kids to sort (e.g. shapes, size, colour)
				• Transact using real money
				• Read numbers at random (e.g. mobile and bus numbers)

Question	0	1	2	3

What do you tell such parents about how they can help their child learn English at home?
 	
(Prompt "any more" once)
	Mentions one or more of the following
	Ask child to:
	    • Recite poems
	    • Recite A-Z
	• Send to tuitions
	• Check exam results
	• Attend PTM
	• Ensure homework is completed
	• Do nothing
		Mentions one or more of the following
		
		Ask child to:
		    • Read words taught in school
		    • Identify letters at random
		    • Identify colours / animals / vehicles, etc.
		    • Practice writing alphabets
		    • Name objects starting with a letter
		• Encourage conversations in English
			Mentions one or more of the following OR one in column 3	***Mentions two or more of the following***
				Ask child to:
				    • Read "new" words
				    • Describe their routine/ picture/ event/ TV show etc.
				    • Tell/ Read stories together in English
				    • Show English stories/ cartoons on YouTube, TV (or similar media)
				    • Speak in English
				    • Ask for sounds of letters/ phonics
				    • Follow simple instructions (e.g. "Go carefully")

Administrator interview questions (8/8)

Question	0	1	2	3
What do you tell such parents about how they can help their child learn English at home? *(Prompt "any more" once)*	*Mentions one or more of the following* • 0 times (or) • Non-academic events (fancy dress) (or) • Just report card distribution • Other	*Mentions one of the following* • One time • Two times	*Mentions both of the following*	*Mentions the following* • More than two times

Teacher interview questions (1/7)

Question	0	1	2	3
How would you teach the numbers 11-20 to your class? *(Prompt "any more" once)*	***Mentions one or more of the following:*** Ask child to: • Repeat (e.g. rhymes, numbers) • Write (numbers, names) • Unsure/ unaware	***Mentions one or more of the following:*** • Flash cards • Draw and count on blackboard • Demo by teacher using materials/ students • Use smartboard	***Mentions one of the following:*** • Students use materials (e.g. sticks, beans, pencils, beads, abacus) • Play games (e.g. snakes and ladders)	***Mentions two or more of the following:***
How would you teach 'addition' to your class? *(Prompt "any more" once)*	***Mentions one or more of the following:*** • Write numbers/ addition on board • Make children copy from board • Dictation • Unsure/ unaware	***Mentions one or more of the following:*** • Draw items on the board • Objects for demonstration (e.g. beads, blocks, magnets, sticks, pencils) • Practice worksheets • Use smartboard	***Mentions one of the following:*** • Children use materials like beads, beans. sticks, stones, abacus, etc. • Children draw, colour or count pictures to add • Play games (e.g. with dice, cards) • Word problems	***Mentions two or more of the following:***

Teacher interview questions(2/7)

Question	0	1	2	3
How do you teach your class to read 3 letter words? *(Prompt "any more" once)*	***Mentions one or more of the following:*** • Write • Memorize word spellings • Unsure/unaware	***Mentions one of the following:*** • TLMs (e.g. flash cards, word-wheel, posters) • Family words (e.g. 'ad', 'og', 'at', 'in') • Sight words	***Mentions two or more of the following OR one in column 3:***	***Mentions two or more of the following:*** Ask child to: • Read stories in class • Read simple words from newspaper/ story book • Phonics • Blending, segmenting
Let's say you have a niece or nephew who is in UKG. How will you check what she/he knows in Math? *(Prompt "Can you suggest more ways to check" once)*	***Mentions one or more of the following:*** Ask child to: • Recite1-100 • Write numbers • Write number names • Check test scores/report card • Unaware	***Mentions one of the following:*** Ask child to: • Identify numbers at random • Identify shapes • Count using objects (e.g. beads, fruits, vegetables) • Add or subtract • Recite tables	***Mentions two of the following OR one in column 3:***	***Mentions two or more of the following:*** Ask child to: • Fill missing numbers • Identify 'before-after' numbers • Compare quantities/ numbers (e.g. bigger/ smaller, less/ more than, largest/ smallest)

Teacher interview questions (3/7)

Question	0	1	2	3
And how will you check what your niece or nephew knows in English? *(Prompt "Can you suggest more ways to check" once)*	*Mentions one or more of the following:* Ask child to: • Recite A-Z • Recite rhymes • Repeat after teacher • Write alphabets • Check test scores/report card • Unsure/ unaware	*Mentions one of the following:* Ask child to: • Identify letters at random • Match sounds with letters • Write dictated alphabets / words / spellings • Respond to simple questions (for e.g. "What is your name?") • Use every day phrases like "good morning," "please," "thank you" • Read familiar words taught in class (cat, bat, apple) • Speak in English	*Mentions one of the following:* Ask child to: • Describe a picture in English/ Narrate a story/ event • Read new words (e.g. in newspaper, story book, billboard) • Match the word to the picture • Follow instructions in English • Name objects starting with a letter • Phonics • Blending of sounds	*Mentions two or more of the following:*

Teacher interview questions(4/7)

Question	0	1	2	3
What do you tell them [parents] about how they can check learning in Math? *(Prompt "any more ways to check" once)* *(Prompt "Give examples of homework" if the response is "Ensure homework is completed")*	*Mentions one or more of the following:* Check if child can: • Recite 1-100 • Recite tables • Copy numbers • Check report cards • Ensure homework is completed • Do nothing	*Mentions one of the following:* Check if child can: • Identify numbers at random • Identify shapes • Count using objects (e.g. beads) • Add or subtract	*Mentions two of the following OR one in column 3:*	*Mentions two or more of the following:* Check if child can: • Fill missing numbers • Identify 'before-after' numbers • Compare quantities/ numbers (e.g. bigger/ smaller, less/ more than, largest/ smallest)

Teacher interview questions (5/7)

Question	0	1	2	3
What do you tell them [parents] about how they can check learning in English? *(Prompt "any more ways to check" once)* *(Prompt "Give examples of homework" if the response is "Ensure homework is completed")*	*Mentions one or more of the following:* Check if child can: • Recite 1-100 • Recite tables • Copy numbers • Check report cards • Ensure homework is completed • Do nothing	*Mentions one or more the following:* Check if child can: • Read words in the textbook • Identify letters • Identify colours/ animals/ vehicles • Speak in English	*Mentions one of the following:* Check if child can: • Read "new" words • Describe a picture/ event/ story with some English • Match sounds with letters • Identify sounds of letters/ phonics • Respond in English to new questions (e.g. "What did you learn in school?")	*Mentions two or more of the following*

Teacher interview questions (6/7)

Question	0	1	2	3

What do you tell them [parents] about how they can help their child learn Math at home?
 	
(Prompt "any more" once)
 	
(Prompt "Give examples of homework" if the response is "Ensure homework is completed")
	Mentions one or more of the following
	Ask child to:
	  • Recite numbers
	  • Copy numbers
	• Check report cards
	• Send to tuitions
	• Ensure homework is completed
	• Do nothing
		Mentions one of the following
		
		Ask child to:
		• Count objects
		• Identify shapes, etc.
		• Revise lesson taught at school
		• Add or subtract
			Mentions two or more of the following OR one in column 3	***Mentions two or more of the following***
				Ask child to:
				• Arrange currency in order of value
				• Word problems for addition/ subtraction
				• Play simple games (e.g. snakes and ladders)
				• Teach kids to sort (e.g. shapes, size, colour)
				• Transact using real money
				• Read numbers at random (e.g. mobile and bus numbers)

Teacher interview questions (7/7)

Question	0	1	2	3
What do you tell them [parents] about how they can help their child learn English at home? *(Prompt "any more" once)* *(Prompt "Give examples of homework" if the response is "Ensure homework is completed")*	***Mentions one or more of the following*** Ask child to: • Recite poems • Recite A-Z • Send to tuitions • Check exam results • Attend PTM • Ensure homework is completed • Do nothing	***Mentions one or more of the following*** Ask child to: • Read words taught in school • Identify letters at random • Identify colours / animals / vehicles, etc. • Practice writing alphabets • Name objects starting with a letter • Encourage conversations in English	***Mentions one or more of the following OR one in column 3***	***Mentions two or more of the following*** Ask child to: • Read "new" words • Describe their routine/ picture/ event/ TV show etc. • Tell/ Read stories together in English • Show English stories/ cartoons on YouTube, TV (or similar media) • Speak in English • Ask for sounds of letters/ phonics • Follow simple instructions (e.g. "Go carefully")

Parent interview questions (1/3)

Questions	0	1	2	3
	Mentions one or more of the following:	*Mentions one or more of the following:*	*Mentions two or more of the following or one out of column 3:*	*Mentions two or more of the following:*

1) What do you do to check if your child is learning Math?
 	
(Prompt "any more ways to check" once)
	• Send to tuitions
	• Send to school
	• Check exam results/ progress report
	• Recite numbers
	• Write numbers/ number names
	• Don't do anything
	• Unsure
		Ask child to
		  • Count items (fruits/ vegetables)
		  • Identify numbers at random
		  • Identify shapes
		  • Identify currency value
		  • Recite tables
		• Check homework/ notebook
				Ask child to
				  • Transact with money
				  • Play games involving cards/ dice
				  • Identify missing number before/ after
				  • Add/ subtract/ divide

2) What do you do at home to help your child learn Math?
 	
(Prompt "any more" once)
	• Send to tuitions
	• Send to school
	• Recite numbers
	• Don't do anything
	• Unsure
		Ask child to
		  • Count items (fruits/ vegetables)
		  • Write number names
		  • Recite tables
		  • Do sums in notebook
		  • Revise what's taught at school
		  • Identify shapes in the environment
		• Help with homework
		• Ask tuition/ school teacher
				Ask child to
				  • Transact with money
				  • Identify largest numbers
				  • Identify missing number before/ after
				  • Do word problems
				  • Play games involving cards/ dice

Parent interview questions (2/3)

Questions	0	1	2	3
3) At the end of Sr KG/ this grade what should your child know in Math? [Use visual aid with 2 conceptual options, and 2 rote options]	• Rote responses	• 1 correct response	• 2 correct response	
	Mentions one or more of the following:	*Mentions one or more of the following:*	*Mentions only one of the following:*	*Mentions two of the following:*

4) What do you do to check if your child is learning to read English?	• Recite A-Z
	• Send tuitions
	• Send to school
	• Check exam results/ progress report
	• Recite nursery rhymes
	• Attend parent teacher meeting
	• Don't do anything
	• Unsure
		Ask child to:
		  • Identify letters at random
		  • Read words/ alphabets in school/ tuition book
		• Check spellings
		• Homework
				Ask child to:
				• Read new words
				• Match sounds and letters
				• Identify sounds in words
				• Match words and picture of the word
				• Read simple stories

Parent interview questions (3/3)

Questions	0	1	2	3
	Mentions one or more of the following:	*Mentions one or more of the following:*	*Mentions two or more of the following or one in column 3:*	*Mentions two or more of the following:*
5) What do you do at home to help your child learn English?	• Send to tuitions • Send to school • Recite nursery rhymes • Spouse/ sibling helps • Don't do anything • Unsure	Ask child to: • Identify letters at random • Read words/ alphabets in school/ tuition book • Have simple conversations in English • Follow simple instructions given in English • I speak to my children in English		Ask child to: • Read new words • Show simple English cartoon/ stories on YouTube (or similar media) • Read out English stories
3) At the end of Sr KG/ this grade what should your child know in Math? [Use visual aid with 2 conceptual options, and 2 rote options]	• Rote	• 1 correct response	• 2 correct response	