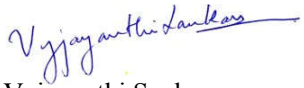
Student Learning Assessment of AMC Schools – GyanShala intervention

Assessment Report March 2010 - Ahmedabad

By
Educational Initiatives Private Limited
(EI)

Table of Contents

This report covers assessment done by Educational Initiatives Pvt Ltd for Gyan Shala in March 2010.



Vyjayanthi Sankar
Vice President Large Scale Assessment.

1. Background:

The mission of Gyan Shala is to ensure the quality of basic education to the children from poor rural and urban families is at par with what is available to high income or elite social groups. To reach this mission Gyan Shala is working in the slums of Ahmedabad with close to 8000 students by providing quality education at 1/4th the price of elite private schools or government schools.

In 2006, The Government asked Gyan Shala to take up a pilot program for improving quality of learning in Government Schools in grades 1-3 in Ahmedabad Municipal Corporation (AMC), by introducing its pedagogy, curriculum material and teacher training. Formal assessment of the impact of this pilot was included as a part of agreement. Randomly selected samples of treatment and control schools were chosen for starting the pilot and assessing its impact. In 2006-07, around 2000 children in 23 treatment schools started participating in the pilot in grade 1, and each year, a new batch was inducted in grade 1 as the earlier batches moved to the next higher grade class. In the year 2008-09, the first batch of students, joining the pilot, completed grade 3. Recognizing the apparent positive impact, the Government asked Gyan Shala to take up another pilot starting directly with grade 4 students in 30 randomly selected schools in 2008-09. Like earlier, Gyan Shala also selected a control group to facilitate impact assessment.

Gyan Shala has partnered with Educational Initiatives (EI) to measure the impact of pilot on learning in students of classes 2, 3 of the first pilot and class 4 of second pilot, by comparing the performance in treatment and control groups, and also comparing the performance in these schools with slum schools managed by Gyan Shala.

This report covers the assessment carried out in the month of March 2009 in Gujarati, Maths and EVS. The evaluators from Gyan Shala team were trained by EI team for standardised administration of the tests in all the schools and coding the answer sheets as per the scoring rubric. This training was carried out on March 17th, 2010. The tests were subsequently carried out by the Gyan Shala team and the data sent to EI for analysis.

Classes and Subjects Tested:

Class	Subjects Tested
2	Language and Maths
3	Language and Maths
4	Language, Maths and EVS

Structural Design of the Tests:

The heart of any assessment exercise is the instrument design. A review of most similar tests conducted in India suggests that the tool design has not been given the importance it deserves. Most studies often do not enclose or append the actual test, though the subsequent data analysis is highlighted a lot. The test blueprint should be based on a detailed understanding of the curriculum and experience from the field on the levels of learning that exist in reality in similar types of schools taken for the study.

Test papers for classes 2 and 3 were the same as had been used in large scale assessments of EI. Test papers for class 4 were newly developed by Educational Initiatives.

Paper Format:

One often finds that students in our public schools in India face difficulty in reading and hence may not be able to answer an item because of her/his ability to read rather than difficulty with the competency addressed by the item. In order to address this issue in measurement of ability, the test papers designed by Educational Initiatives had a mix of 'Written' and 'Group oral' components.

- **Written (W)** - The 'Written' part of the test had questions that were read by students themselves and answered in the paper.
- **Group Oral (GO)** - 'Group Oral' part of the test refers to the items where the questions were read out by the evaluator one question at a time and the students responded by writing the answer in the paper.

The distribution of questions in each paper and the duration was as follows:

Class	Subject	No of Questions			Duration
		Written	Group Oral	Total	*(minutes)*
Class 2	Integrated*	-	42	42	100
Class 3	Language	-	27	27	90
Class 3	Maths	-	30	30	90
Class 4	Language	25	9	34	110
Class 4	Maths	33	6	39	110
Class 4	EVS	37	0	37	110

** included 22 questions from Language and 20 questions from Maths*

Question Types: The tests included both ***multiple choice*** items and ***free response item types***. Free Response items required the students to give a numerical response, write a word, a short sentence, interpret text or diagrams and complete a sketch, etc. Scoring free response items objectively required a well defined scoring rubric and intense training to evaluators. From an objectivity and analysis point of view, multiple-choice questions offered many advantages. Pre-tests also revealed that students are generally familiar with multiple choice formats. The tests were competency based in the sense that every question was linked to a particular competency. Apart from the ***competency balance***, the tests were also designed to include '***straightforward***' questions and '***non-straightforward'*** items. A straightforward item was one which had a 'form' as it appeared in the textbook. A 'non-straightforward' item was not very different or challenging[1], but provided information on whether children were able to perform only textbook type problems or whether they are able to apply the essential skills and competencies and use their understanding to write answers.

Competencies Tested:

S. No	Class 2 Language	No. of Questions
1	Knows names of objects, birds, animals and actions seen in daily life.	3
2	Reads and writes all the letters	3
3	Reads and writes familiar and simple words that have 2- 3 letters, with or without matras	8
4	Uses simple prepositions and adjectives (eg. big, small, far, near, up, down, above, below, before, after, one, many, sweet, bitter, black, white) appropriate to context	2
5	Reads, understands and writes simple dictated sentences that have 3 words	2
6	Follows simple oral instructions	2
7	Understand simple, short stories of 10-12 sentences when told and comprehends stated facts	2

S. No	Class 2 Maths	No. of Questions
1	Number concepts	8
2	Operations on Whole Numbers	6
3	Shapes and Measurement	3
4	Problem Solving	3

S. No	Class 3 Language	No. of Questions
1	Knows the names of objects, birds, animals, etc seen in daily life	3
2	Reads and writes simple letters	3
3	Reads and understands simple words	3
4	Writes words independently and when dictated	6
5	Reads and writes simple sentences	3
6	Comprehends short and simple text independently	3

7	Follows simple oral instructions	3
8	Understands stories when told and comprehends beyond the stated facts	3

[1] For example, a question that asks what *4 tens and 3 ones* is considered straightforward; whereas one that asks what is 5 *ones* and 4 *tens* – in which the order is reversed and which tests whether the child has understood the meaning of ones and tens - is considered non-straightforward, though it cannot be considered challenging.

S. No	Class 3 Maths	No. of Questions
1	Pre-math and counting	3
2	Number Relations	6
3	Addition	3
4	Subtraction	3
5	Addition and Subtraction	3
6	Multiplication	3
7	Measurements	3
8	Geometry	3
9	Problem Solving	3

S. No	Class 4 Language	No. of Questions
1	Recognises and writes letters, knows starting sound and alphabetical sequence	5
2	Reads and writes simple words that are moderately difficult and have more than 5 letters and knows names of objects, birds, animals, etc as seen in daily life	9
3	Uses words appropriate to the context based on their meaning, number, gender, time and description	4
4	Reads and writes 3 simple sentences that have 5 -7 words in a sentence	3
5	Reads short stories with simple words and answers who/ what/ where/ how questions	4
6	Reads descriptive text, of 5-8 sentences independently and comprehends beyond stated facts	4
7	Listens and understands stories read out and comprehends beyond stated facts	5

S. No	Class 4 Maths	No. of Questions
1	Number Concepts and relationships	8
2	Operations on whole numbers	14
3	Fractions and Decimals	4
4	Measurement, Data Interpretation/Analysis: averages, percentage, graph reading, etc	4
5	Basic Shapes, Geometry and Visual estimation - concepts and applications	4
6	Applications in daily life; Word / Visual Problems; Problem Solving	5

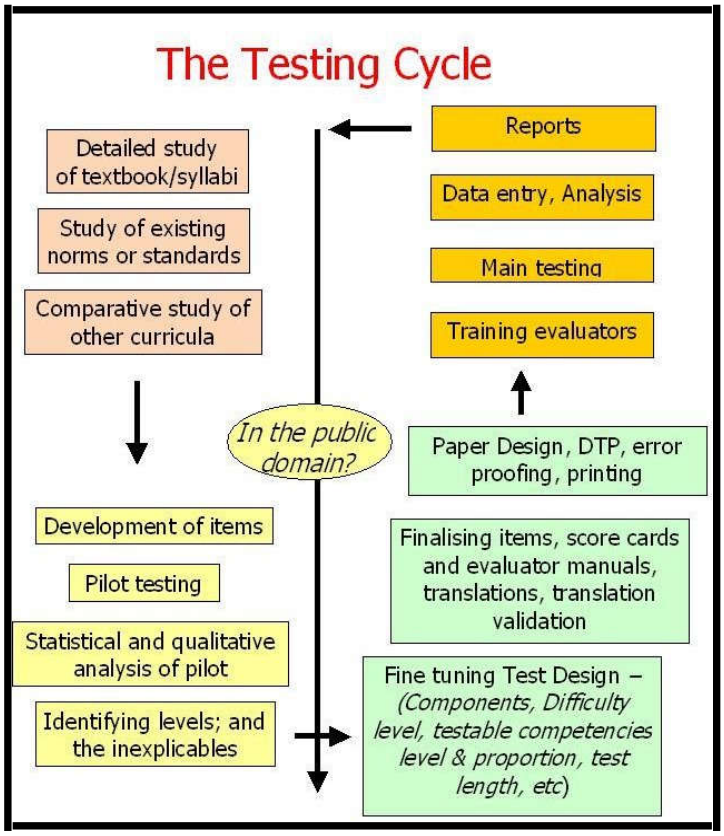
S. No	Class 4 EVS*	No. of Questions
1	Recall of facts (textbook)	7
2	Recall of facts (general awareness)	6
3	Observation	4
4	Classification, identification, pattern recognition	6
5	Reasoning and analysis	3
6	Interpreting visual information	5
7	Estimation and measurement	3
8	Design of experiments, drawing conclusions, generalisation, verification	3

**questions were from topic areas such as - the living environment; the physical environment; technology; the earth, environment and universe; and man and society.*

Process of Test Development

An assessment for learning requires a systematic approach in all its stages – test design, test development, test administration, test evaluation, data entry, analysis and dissemination. The rigour with which each of these stages is carried out ensures the success of an assessment program.

The study followed an entire sequence of events in the assessment process which is shown below as 'The Testing Cycle'.



Curriculum Analysis involves detailed study of textbooks/syllabi, studying existing norms or standards and comparative study of other curricula.

Defining the test blueprint in terms of competencies, weightage, components such as group oral and written, test length, etc

Item writing/selection- The questions were developed/selected based on the curriculum and the blueprint developed for each subject and class. Some items were also selected from other studies for comparative analysis.

Item translation- The questions were developed in English and then translated in the vernacular language (Gujarati for this study) by experts.

Pilot testing – The papers developed were pilot tested with a small number of students. The pilot results were used to fine tune the test design in terms of test difficulty level, identifying errors if any at item level;

The test papers were supplemented with 'Scoring Cards', 'Top Sheet' and 'Evaluators' Manual'. The 'Scoring Card' provided a question-wise rubric (with scores / codes / answers) on how each response is to be scored. The 'Top Sheet' is the sheet in which the evaluator marked the codes, which were then entered into the computer. The 'evaluator's manual' had the instructions the evaluators have to follow while carrying out the testing and coding answer responses.

Final designing, error proofing and printing- The test paper were given for final designing, error proofing and then the print ready version was made ready.

Training to Evaluators:

A workshop was done to create awareness in the evaluators about the purpose of the testing program and the crucial role they play in collecting the right information about student learning (evaluators tend to confuse randomized testing with high stakes testing and this sometimes leads to impartial administration of the assessment tool). The workshop also ensures that evaluators thoroughly understand the test papers and coding of answer responses that is required for accurate assessment of each test item. The following is covered exhaustively in the workshop:

The test administration process - A thorough training on how each question needs to be administered in the class is carried out with demonstration by the trainer and then subsequently by the participants. The evaluators are enabled to acquire skills needed to administer the test appropriately. (For example, to pitch their voice and add clarity to their speech while administering instructions and questions orally; to ensure that they do not accidentally give leads/clues to answers; to handle classroom situations during testing; and to plan appropriately for smooth conduction of test).

Scoring - Test evaluators were also trained to code the answer responses according to a scoring rubric given for each test item in the score card. The evaluators were also trained to enter the data on to the topsheet.

Specific instruction - the Do's and Don'ts while test administration process - Specific instructions are given to the evaluators as to what would be an appropriate behavior and code of conduct that they need to follow while going for testing. For e.g. Not getting into irrelevant discussions with the school authorities etc.

Test Administration: The test papers were administered by the Gyan Shala team in schools.

1.3 Class, School Category, Subjects and Medium tested:

Students from classes 2, 3 and 4 were tested in Maths and Language. Class 4 students also took tests in EVS. The tests were administered in Gujarati medium. Three school categories were assessed:

A. Gyan Shala schools (GS)

B. Ahmedabad Municipal Schools with Gyan Shala intervention (AMC-I)

C. Ahmedabad Municipal Schools as control schools (AMC-C)

Number of Schools covered & Total number of students tested:

Category of Schools	Number of Schools		Number of Students		Number of Students tested	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**
GS	121	104	2807	2953	2509	2400
AMC -I	52	36	5191	5976	4353	3728
AMC-C	48	17	3845	2584	3214	1545
Total	**221**	**2167**	**11843**	**13523**	**10076**	**9683**

School Category	Intervention - 2009							Intervention - 2010						
	Class 2		Class 3		Class 4			Class 2		Class 3		Class 4		
	Math	Lang	Math	Lang	Math	Lang	EVS	Math	Lang	Math	Lang	Math	Lang	EVS
GS	593	593	1653	1652	242	248	242	536	536	1575	1575	239	238	240
AMC -I	1136	1136	1358	1348	1707	1758	1716	1514	1515	1006	982	1026	1035	1020
AMC-C	690	690	694	698	1612	1665	1596	420	420	525	502	503	527	505
Total	**2419**	**2419**	**3705**	**3698**	**3561**	**3671**	**3554**	**2470**	**2471**	**3106**	**3059**	**1768**	**1800**	**1765**

Concerns:

- During analysis some mismatches were found in the school master list given to us and assessment data. Number of schools tested was different in both school master list and assessment data and had to be resolved.

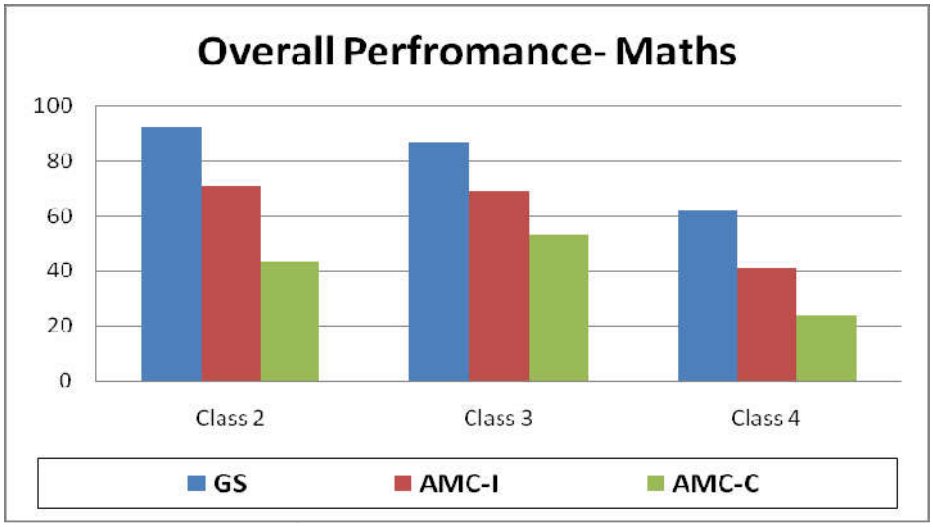
Other reports enclosed:

1. Data Accuracy and Representation
2. Overall Performance Report – Gyan Shala
3. Overall performance Report- AMC Intervention
4. Overall Performance Report- Control
5. Question-wise Performance Report- Gyan Shala Intervention
6. Question-wise Performance Report- AMC Intervention
7. Question-wise Performance Report- Control
8. School-wise Analysis Report- Gyan Shala
9. School-wise Analysis Report- AMC Intervention
10. School-wise Analysis Report- Control
11. ComparisonReport

2. Overall Performance:

Maths: The Maths test was administered in classes 2, 3 and 4, in all the three category schools. The highlights of the overall Maths performance are as follows:

- The Gyan Shala school students scored higher compared to the AMC-I (AMC-Intervention) and AMC-C (AMC-Control) school students across classes. AMC-I students scored higher than the AMC-C students across classes.

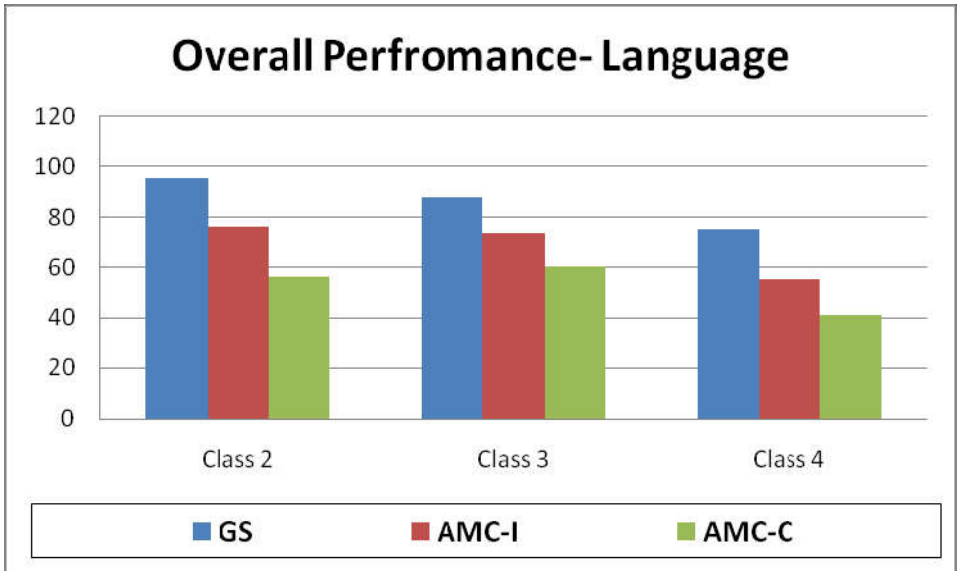


Maths									
Category of school	Class 2			Class 3			Class 4		
	N	AVG	SD	N	AVG	SD	N	AVG	SD
GS	536	92.3	10.7	1584	86.7	11.3	238	62.0	16.4
AMC – I	1514	71.0	27.9	1006	68.8	21.9	1026	40.9	17.6
AMC – C	420	43.3	30.0	525	52.9	19.0	503	24.0	15.6

N- Sample size, AVG- Average score, SD- Standard Deviation

Language:

- The Gyan Shala school students scored higher compared to the AMC-I and AMC-C school students across classes. AMC-I students scored higher than the AMC-C students across classes.

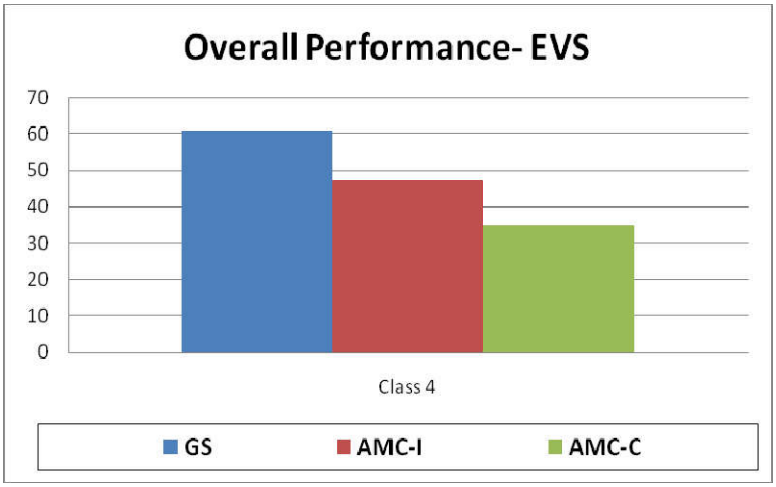


Language									
Category of school	Class 2			Class 3			Class 4		
	N	AVG	SD	N	AVG	SD	N	AVG	SD
GS	536	95.5	7.8	1575	88.0	9.9	239	75.0	12.9
AMC – I	1514	76.0	23.1	982	73.6	18.0	1035	55.3	18.2
AMC – C	420	56.0	27.7	502	60.3	20.9	527	41.2	18.3

N- Sample size, AVG- Average score, SD- Standard Deviation

EVS: The EVS test was administered only in class 4. The test had questions covering science and social studies. The highlights of overall performance in EVS are

- As seen in Maths and Language papers, Gyan Shala school students scored higher than AMC-I and AMC-C students. The AMC-I students scored higher than the AMC-C students.



Category of school	Class 4		
	N	AVG	SD
GS	240	60.9	11.4
AMC – I	1020	47.4	14.1
AMC – C	505	34.7	15.2

N- Sample size, Avg- Average score, SD- Standard

2.4 Performance across Different Categories of Schools - Significance Test:

An independent t-test test was performed for each pair of school types to know the difference between the performances of three school types.

Class 2 Maths

	GS	AMC-I	AMC-C
GS		▲*	▲*
AMC-I	▼*		▲*
AMC-C	▼*	▼*	

Class 2 Language

	GS	AMC-I	AMC-C
GS		▲*	▲*
AMC-I	▼*		▲*
AMC-C	▼*	▼*	

Class 3 Maths

	GS	AMC-I	AMC-C
GS		▲*	▲*
AMC-I	▼*		▲*
AMC-C	▼*	▼*	

Class 3 Language

	GS	AMC-I	AMC-C
GS		▲*	▲*
AMC-I	▼*		▲*
AMC-C	▼*	▼*	

Class 4 Maths

	GS	AMC-I	AMC-C
GS		▲*	▲*
AMC-I	▼*		▲*
AMC-C	▼*	▼*	

Class 4 Language

	GS	AMC-I	AMC-C
GS		▲*	▲*
AMC-I	▼*		▲*
AMC-C		▼*	▼*

Class 4 EVS

	GS	AMC-I	AMC-C
GS		▲*	▲*
AMC-I	▼*		▲*
AMC-C	▼*	▼*	

GS- Gyan Shala Schools; AMC-I – AMC Schools with Intervention; AMC-C –Control Schools

* *The mean difference is statistically significant at the .01 level.*

Legend:

▲* - Average achievement is statistically significantly higher than comparison category (e.g., in Language Class 3, GS performance is significantly higher than AMC-I and AMC-C)

▼* - Average achievement is statistically significantly lower than comparison category (e.g., in Language Class 3 AMC-I and AMC-C performances are significantly lower than GS)

Maths

Gyan Shala schools performed statistically significantly better than AMC-I and AMC-C schools across classes.

AMC-I schools performed statistically significantly better than AMC-C schools across classes.

Language

Gyan Shala schools performed statistically significantly better than AMC-I and AMC-C schools across classes.

AMC-I schools performed statistically significantly better than AMC-C schools across classes.

Class 4 EVS

Gyan Shala schools performed statistically significantly better than AMC-I and AMC-C schools across classes.

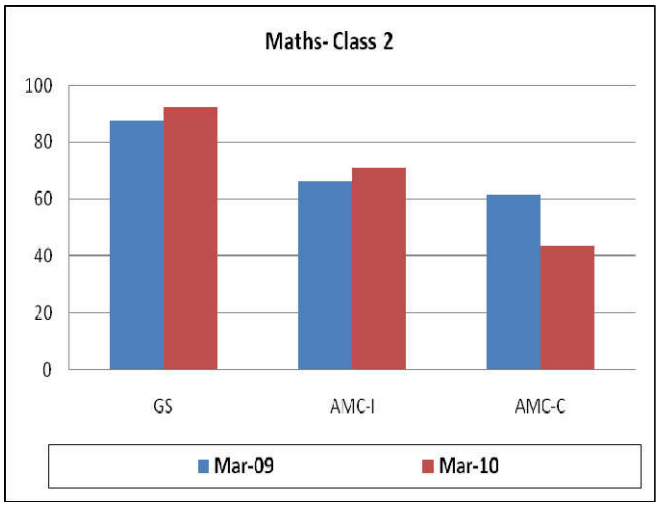
AMC-I schools performed statistically significantly better than AMC-C schools across classes

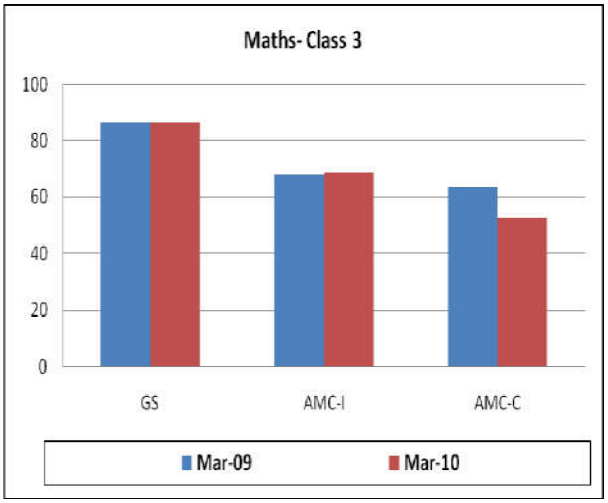
3. Comparative Performance:

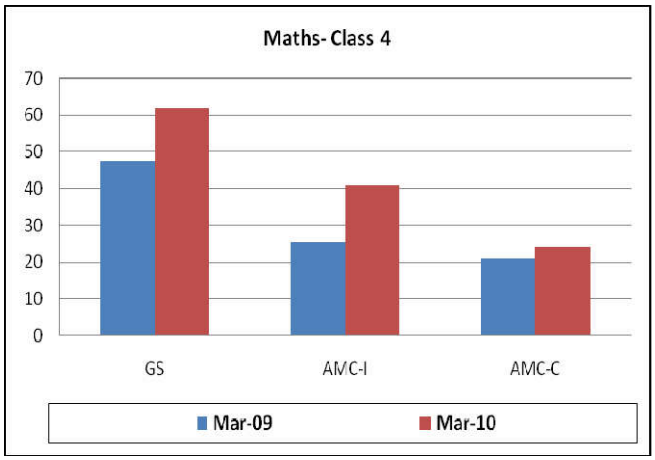
In this section of the report, we would look at the comparative performance of the three categories of school in the two rounds of testing (Mar-09 and Mar-10). The comparison is being made subject wise, and class wise.

Maths: The Maths test was administered in classes 2, 3 and 4, in all three categories of schools.

- The AMC-Intervention and GS schools' performance improved in classes 2 and 4 in 2010 compared with 2009.
- The AMC-Control schools' performance has gone down in classes 2 and 3 in 2010 as compared with 2009, but improved slightly in class 4 in 2010 as compared with 2009.







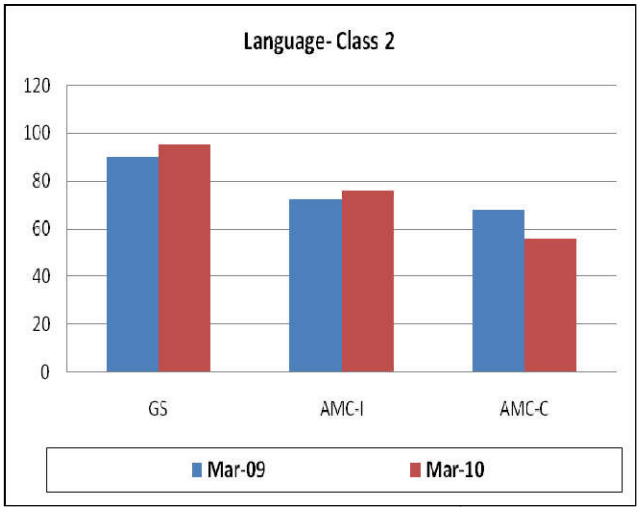
GS- Gyan Shala; AMC-I- Ahmadabad Municipal Corporation-Intervention, AMC-C- Ahmadabad Municipal Corporation Control

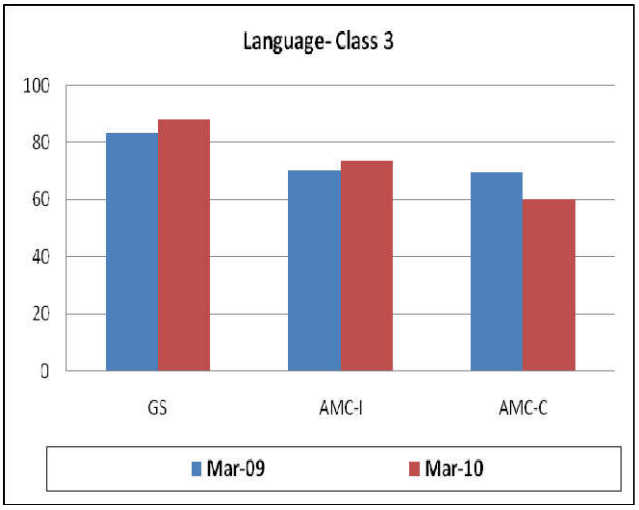
	Class 2						Class 3						Class 4					
	Mar-09			Mar-10			Mar-09			Mar-10			Mar-09			Mar-10		
	N	Avg	SD	N	Avg	SD	N	Avg	SD	N	Avg	SD	N	Avg	SD	N	Avg	SD
GS	593	87.6	13.2	536	92.3	10.7	1653	86.7	12.1	1584	86.7	11.3	242	47.6	15.9	238	62.0	16.4
AMC -I	1136	66.1	28.6	1514	71.0	27.9	1358	67.8	20.0	1006	68.8	21.9	1707	25.6	16.1	1026	40.9	17.6
AMC-C	690	61.4	29.8	420	43.3	30.0	694	63.8	23.0	525	52.9	19.0	1612	20.9	15.1	503	24.0	15.6

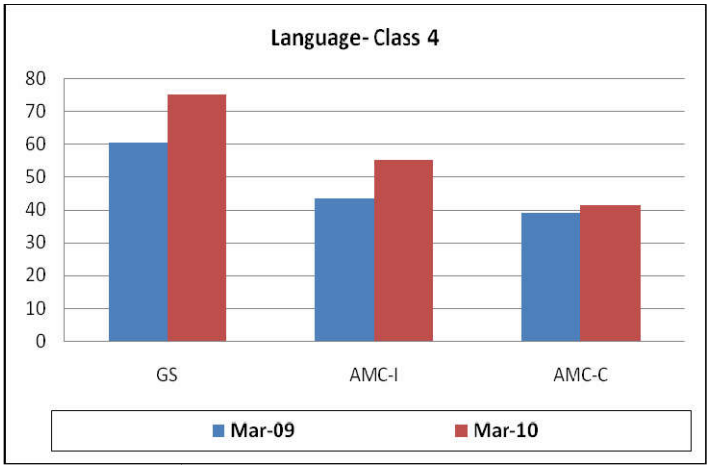
N- Sample size, AVG- Average score, SD- Standard Deviation

Language:

- The GS schools' performance improved in all three classes in 2010 (slight improvement in class 3).
- The AMC-Intervention schools' performance improved in class 4 and improved slightly in classes 2 and 3 in 2010.
- The AMC-Control schools' performance has gone down in classes 2 and 3 in 2010 as compared with 2009.





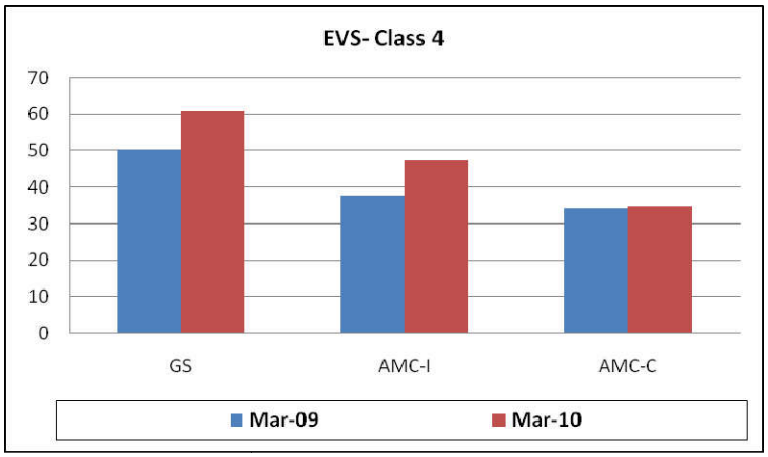


	Class 2						Class3						Class 4					
	Mar-09			Mar-10			Mar-09			Mar-10			Mar-09			Mar-10		
	N	Avg	SD	N	Avg	SD	N	Avg	SD	N	Avg	SD	N	Avg	SD	N	Avg	SD
GS	593	89.9	10.9	536	95.5	7.8	1652	83.6	12.0	1575	88.0	9.9	248	60.5	13.3	239	75.0	12.9
AMC -I	1136	72.1	25.4	1514	76.0	23.1	1348	70.1	19.0	982	73.6	18.0	1758	43.5	18.8	1035	55.3	18.2
AMC-C	690	68.0	25.3	420	56.0	27.7	698	69.3	21.0	502	60.3	20.9	1665	39.0	19.7	527	41.2	18.3

N- Sample size, AVG- Average score, SD- Standard Deviation

EVS: The EVS test was administered only in class 4. The test had questions covering Science and Social Studies.

- The GS and AMC-Intervention schools' performance in EVS improved from March 2009 to March 2010.



Category of school	Class 4					
	Mar-09			Mar-10		
	N	AVG	SD	N	AVG	SD
GS	242	50.3	9.7	240	60.9	11.4
AMC – I	1716	37.8	16.3	1020	47.4	14.1
AMC – C	1596	34.2	17.3	505	34.7	15.2

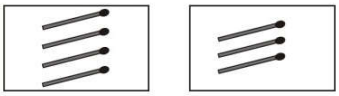
N- Sample size, Avg- Average score, SD- Standard Deviation

4. Nature of learning:

Performance on 'Straightforward and 'Not Straightforward' questions:

'Straightforward' and 'not-straightforward' questions can also be categorized as pairs of questions that can be described as simple-difficult, basic-proficiency or familiar-unfamiliar types.

Students did relatively well in straightforward questions as compared with non-straightforward questions. They found questions posed in a slightly unfamiliar or atypical form comparatively difficult.

Class	Year	Question	SF/ NSF*	GS	AMC -I	AMC-C
2	2009	There are 6 houses on one side of a street and 5 houses on the other. How many houses were there on the street in all?	SF	90.6	70.1	68.0
	2010		SF	96.6	73.4	42.9
2	2009	How will you find the total number of matchsticks in the two boxes below? Tick (✓) the correct method. A. 4 - 3 B. 3 + 3 C. 4 + 3 D. 4 - 4 	NSF	70.0	39.4	30.0
	2010		NSF	87.5	50.8	15.5
3	2009	Solve: 10 X 6	SF	92.2	66.3	63.4
	2010		SF	93.3	60.7	33.3
3	2009	Which of the following is a correct way of counting the soldiers in the picture below? Tick (√) the correct option  A. 10 + 5 B.10 x 5 C.5 + 10 D. 10 x 10	NSF	75.8	43.4	31.8
	2010		NSF	71.9	49.7	19.6
4	2009	2 3 × 3 ____	SF	77.7	47.4	37.7
	2010		SF	76.5	63.8	44.1
4	2009	What is 3 times 23 ? A. 323 B. 233 C. 69 D. 26	NSF	40.1	17.4	11.5
	2010		NSF	68.9	39.8	22.3

Performance on Reading Comprehension Questions:

In reading comprehension we tried to test students on questions that require comprehending explicitly stated information and retrieving the same. Another set of questions requires the student to understand the passage and interpret and integrate ideas and information given. The answer is not explicitly stated and requires deeper comprehension of the story idea.

In the two years of assessment we found that students did better in questions that required print decoding skills and understanding factual information than questions that required making inferences or interpreting and integrating ideas and information. The performance of students has improved in both types of questions from March 2009 to March 2010.

Class	Question		GS	AMC - I	AMC - C
2	Listen to the story and answer questions 19 and 20 in (single) words. <pic 1>Aasha had a red umbrella. She took it and went out for a walk. That day the wind was strong. <pic 2>As the wind was strong, she could not hold the umbrella. The umbrella flew out of her hand. <pic 3>A crow passing by, took away the open umbrella with her claws. <pic 4>The crow placed the open umbrella upside down on the branch of a tree. She used it as a nest for her babies.				
	Who went for a walk?' *(question that required understanding factual information)*	2009	90.7	69.5	62.2
		2010	96.1	68.9	43.1
	What did the crow use the umbrella as? *(question that required making inferences or interpreting and integrating ideas and information)*	2009	77.1	59.1	51.9
		2010	89.2	55.4	24.5
3	Listen to the story and answer the questions in a word/phrase One day a hungry lion went roaming in the forest in search of food. He saw a cave and went in looking for the animal that lived inside. He found the cave empty. The lion decided to hide inside and wait for the animal that lived in the cave. The cave was the home of a jackal. The jackal noticed large footprints outside the cave when he returned back. He wanted to find out if there were any dangerous animal inside the cave. He shouted, 'Hello cave, Why are you quiet today? You always welcome me when I return home. If you do not reply, I shall go to some other cave'. The lion heard the shouts of the jackal. He thought that the cave was afraid of him and did not talk. So the lion roared, 'hello, hello, welcome home, my friend'. The jackal heard the lion and safely ran away.				
	What was the lion searching for? *(question that required understanding factual information)*	2009	87.4	59.6	59.9
		2010	92.8	69.6	52.6
	In the story, which animal was cleverer? *(question that required making inferences or interpreting and integrating ideas and information)*	2009	73.1	48.2	45.3
		2010	79.4	59.3	34.9
4	Listen to the story and tick the answer for the questions 26 -30 How many Crows in the Kingdom One day Emperor Akbar and Birbal were taking a walk in the palace gardens. It was a nice summer morning and there were plenty of crows happily playing around the pond. While watching the crows, a question came into Akbar's head. He wondered how many crows were there in his kingdom. Since Birbal was accompanying him, he asked Birbal this question. After a moment's thought, Birbal replied, 'There are ninety-five thousand four hundred and sixty-three crows in the Kingdom'. Amazed by his quick response, Akbar tried to test him again, 'What if there are more crows than you answered?' Without hesitating Birbal replied, 'If there are more crows than my answer, then some crows are visiting from other neighboring				

	kingdoms'. 'And what if there are less crows', Akbar asked. 'Then some crows from our kingdom have gone on holidays to other places'.				
	What were Akbar and Birbal doing in the palace gardens? *(question that required understanding factual information)* A. playing B. counting crows C. sitting D. walking	2009	78.2	49.9	48
		2010	75.3	65.4	55.4
	What does the story show us in the end? *(question that required making inferences or interpreting and integrating ideas and information)* A. Akbar's concern for the crows B. Crows can be counted C. Crows travel during holidays D. Birbal's ready wit	2009	19.0	20.9	19.6
		2010	52.7	40.8	26.8

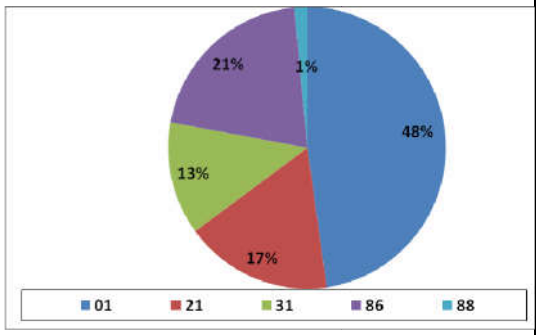
Performance on Independent Writing Questions:

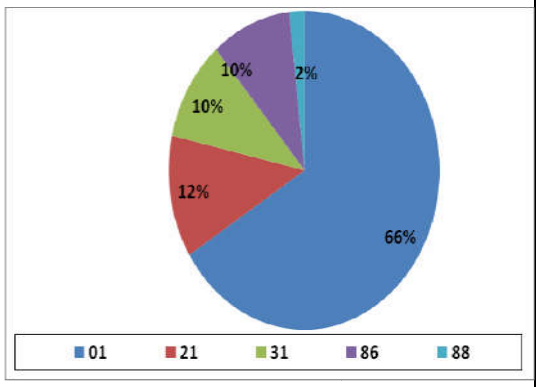
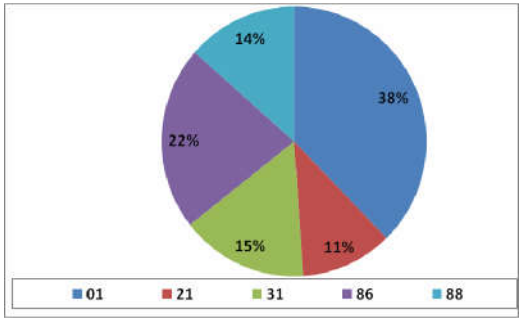
- The percentage of students who wrote meaningful sentences correctly has increased in 2010 as compared with 2009 in Gyan Shala group in classes 3 and 4 and in AMC-Intervention group in class 4. On the other hand, the percentage of students in control group who wrote meaningful sentences correctly has come down from March 2009 assessment in class 3.
- In 2010, the percentage of students who wrote meaningful sentences correctly was highest in the GS group. This percentage in the AMC-Intervention group was higher than the AMC-Control group.

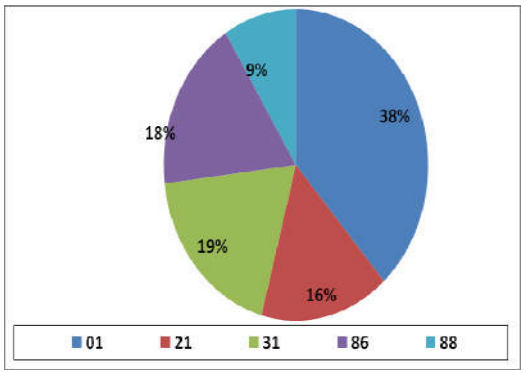
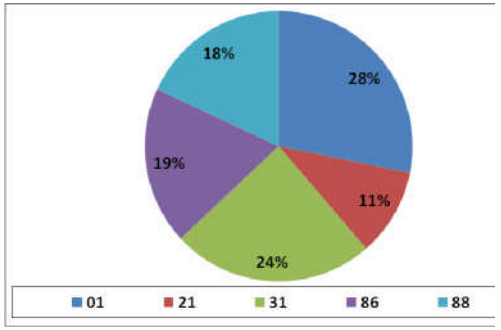
<table>
<tr><th colspan="4">Class 3</th></tr>
<tr><td>Q.17 Write a sentence about the picture.

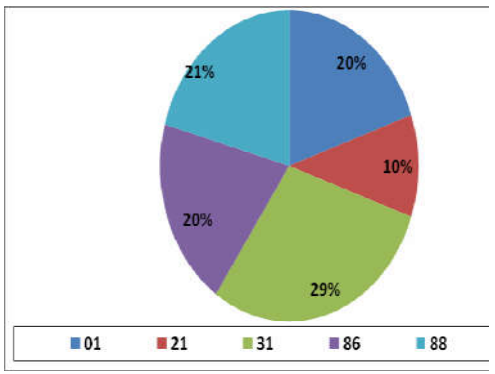
 

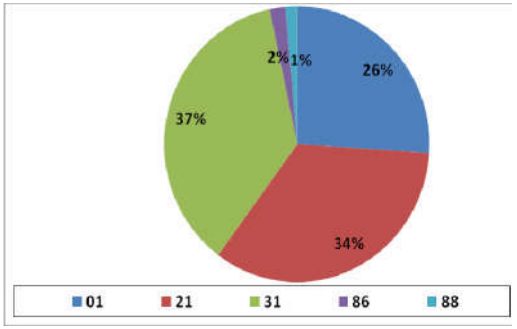
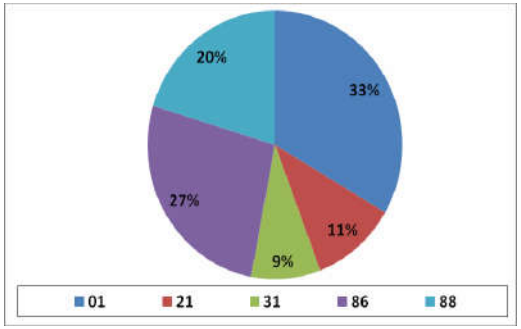
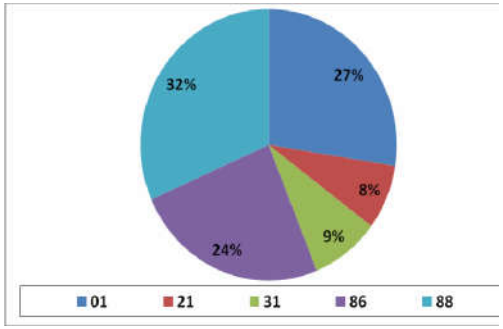
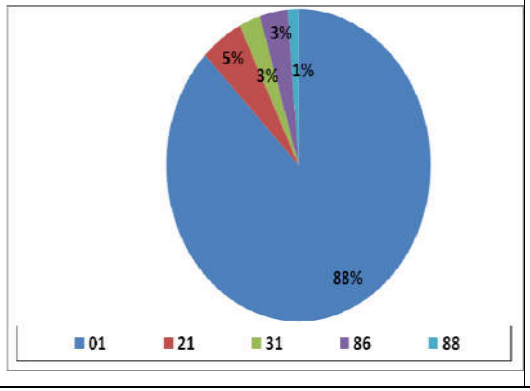
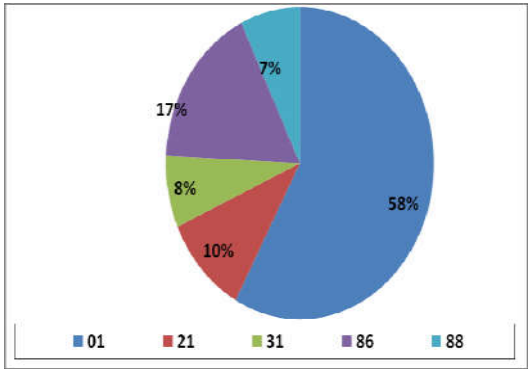
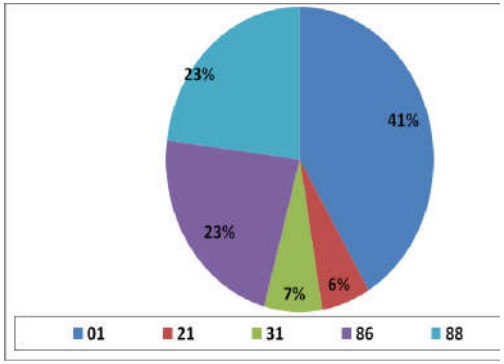
March 2009
GS-59.5%
AMC-I- 47.2%;
AMC- C- 39.5%

March 2010
GS- 74.8 %
AMC-I- 51.0 %;
AMC- C- 32.3%</td><td>Distribution of Student Responses- GS
 

 
</td><td>Distribution of Student Responses- AMC – I
 

 
</td><td>Distribution of Student Responses- AMC- C
 

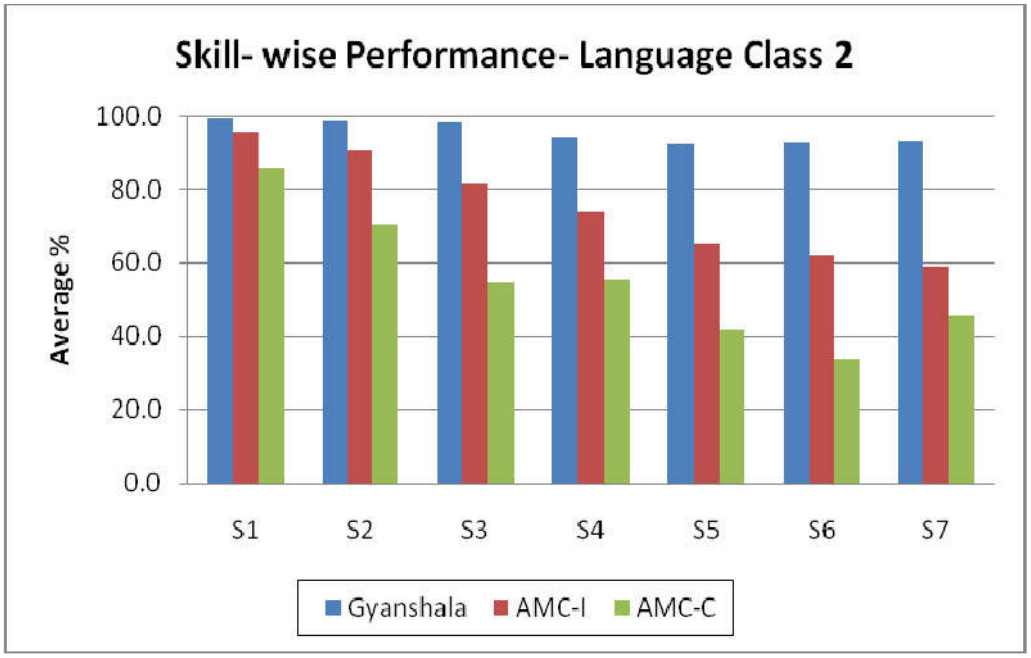
 
</td></tr>
</table>

Class 4			
Q. 17 Write a sentence about this picture 	Distribution of Student Responses- GS	Distribution of Student Responses- AMC –I	Distribution of Student Responses- AMC – C
March 2009 GS- 43.8%; AMC-I- 35.6%; AMC- C-28.7%			
March 2010 GS- 87.7%; AMC-I- 59.6%; AMC- C-42.9%			

Score Card
01- Meaning comes out clearly; no grammatical errors; sentence complete and connected to picture
21- Meaning not completely clear; or some grammatical errors or sentence incomplete but connected to picture
31- Meaning not clear at all, though 1-2 appropriate words, sentence connected to picture
86- Invalid Answer
88- Not attempt

5. Comparative Performance on Different Skills:

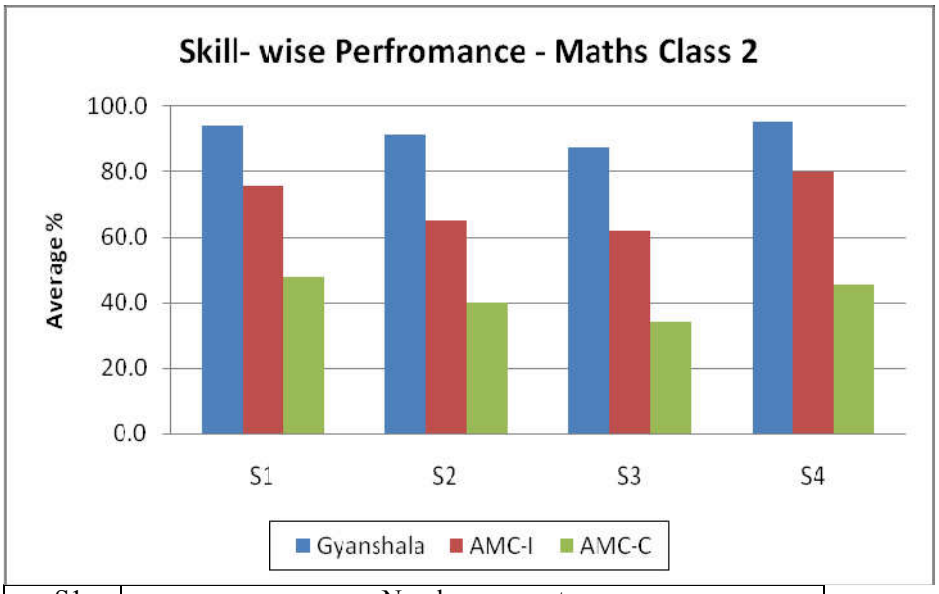
Class 2 Language:



S!	Knows names of objects, birds, animals and actions seen in daily life.
S2	Reads and writes all the letters
S3	Reads and writes familiar and simple words that have 2- 3 letters, with or without
S4	Uses simple prepositions and adjectives appropriate to context
S5	Reads, understands and writes simple dictated sentences that have 3 words
S6	Follows simple oral instructions
S7	Understand simple, short stories of 10-12 sentences when told and comprehends stated facts

The performance of AMC-Control schools was lower than the intervention schools in all the skills. For the intervention schools the easiest skill was S1- 'Knows names of objects, birds, animals and actions seen in daily life'. The most difficult skill for Gyan Shala students continued to be S5- 'Reads, understands and writes simple dictated sentences that have 3 words.' AMC-I students found S7 'Understand simple, short stories of 10-12 sentences when told and comprehends stated facts' the most difficult.

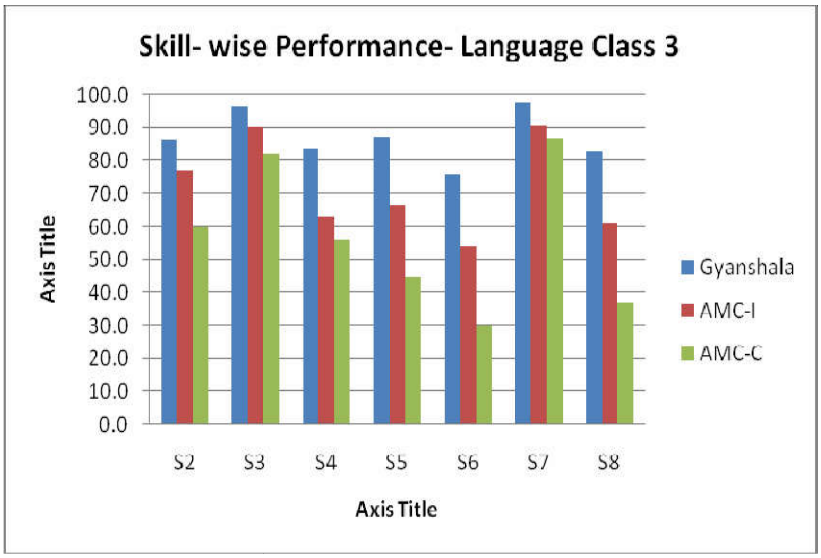
Class 2 Maths:



S1	Number concepts
S2	Operations on Whole Numbers
S3	Problem Solving
S4	Shapes and Measurement

The performance of AMC-Control schools was lower than the intervention schools in all the skills. The easiest skill continued to be S4'Shapes and Measurement', but S1 'Number Concepts'. The most difficult was S4-'Problem Solving' for both the intervention groups.

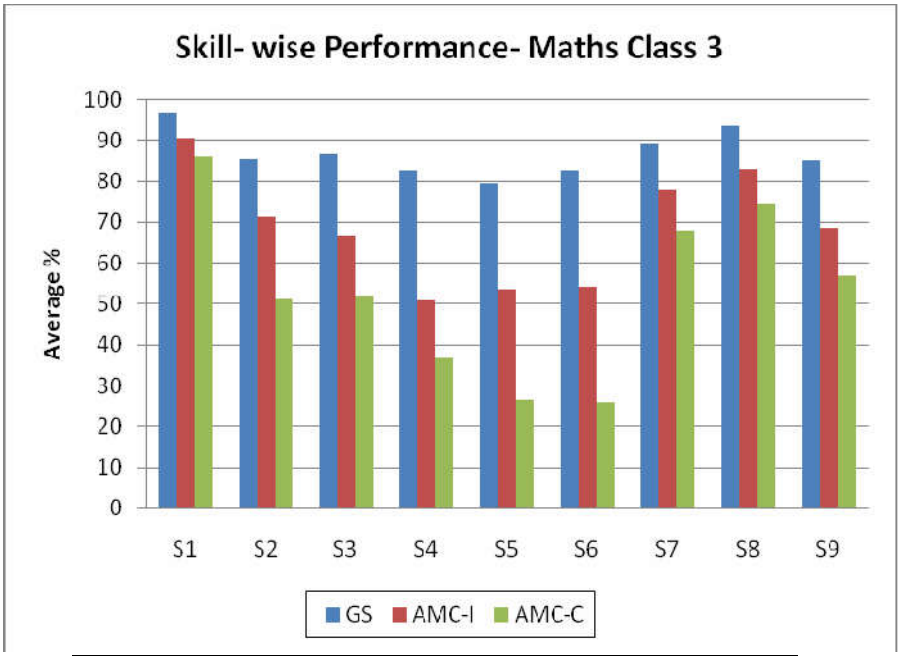
Class 3 Language:



S1	Knows the names of objects, birds, animals, etc seen in daily life
S2	Reads and writes simple letters
S3	Reads and understands simple words
S4	Writes words independently and when dictated
S5	Reads and writes simple sentences
S6	Comprehends short and simple text independently
S7	Follows simple oral instructions
S8	Understands stories when told and comprehends beyond the stated facts

The performance of AMC-Control schools was lower than the intervention schools in all the skills. The easiest skill was S7- 'Follows simple oral instructions' while the most difficult continued to be S6- 'Comprehends short and simple text independently' for both Gyan Shala and AMC-I students.

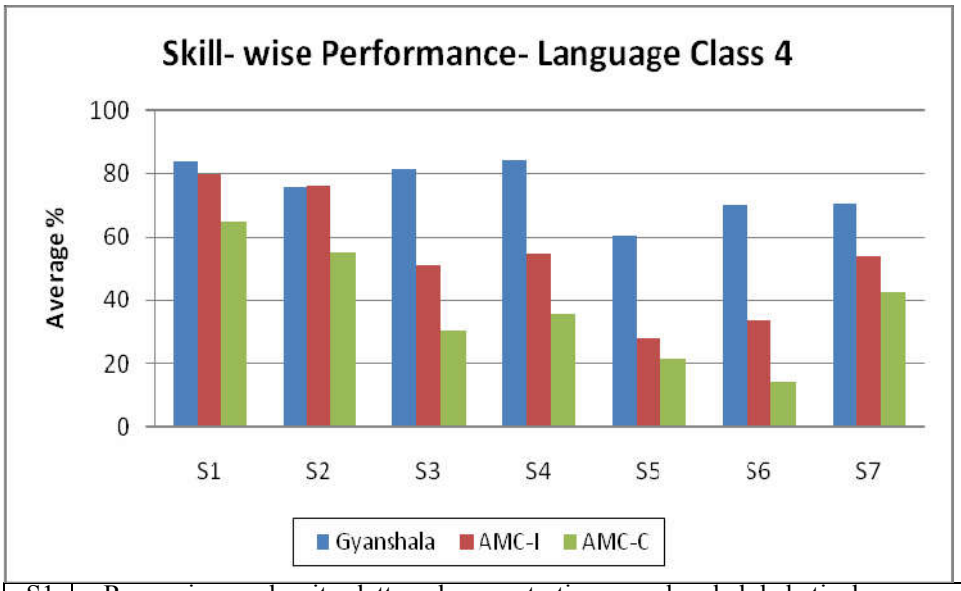
Class 3 Maths:



S1	Pre-math and counting
S2	Number Relations
S3	Addition
S4	Subtraction
S5	Addition and Subtraction
S6	Multiplication
S7	Measurements
S8	Geometry
S9	Problem Solving

The performance of AMC-Control schools was lower than the intervention schools in all the skills. The easiest skill continued to be S1- 'Pre-math and counting' for both the intervention groups. For the GS students, the most difficult skills was S5- 'Addition and subtraction' and S4- 'Subtraction' was the most difficult for AMC-I students.

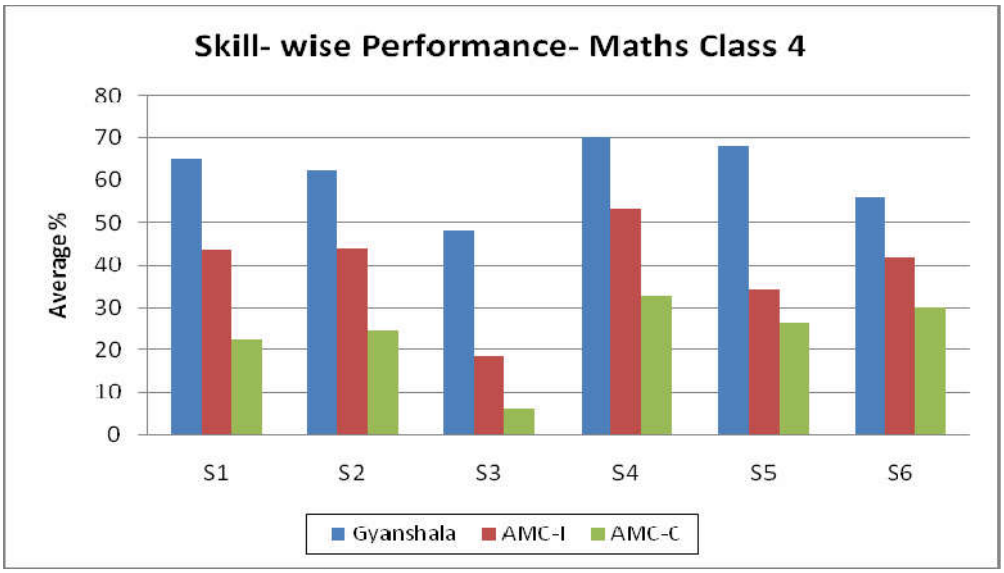
Class 4 Language:



S1	Recognises and writes letters, knows starting sound and alphabetical sequence
S2	Reads and writes simple words that are moderately difficult and have more than 5 letters and knows names of objects, birds, animals, etc as seen in daily life
S3	Uses words appropriate to the context based on their meaning, number, gender, time and description
S4	Reads and writes 3 simple sentences that have 5 -7 words in a sentence
S5	Reads short stories with simple words and answers who/ what/ where/ how questions
S6	Reads descriptive text, of 5-8 sentences independently and comprehends beyond stated facts
S7	Listens and understands stories read out and comprehends beyond stated facts

The performance of AMC-Control schools was lower than the intervention schools in all the skills. The easiest skill for GS students was S4- 'Reads and writes 3 simple sentences that have 5 -7 words in a sentence', and for AMC- I students it was S1- 'Recognises and writes letters, knows starting sound and alphabetical sequence'. The most difficult skill was S5- 'Reads descriptive text, of 5-8 sentences independently and comprehends beyond stated facts' for both GS and AMC-I students.

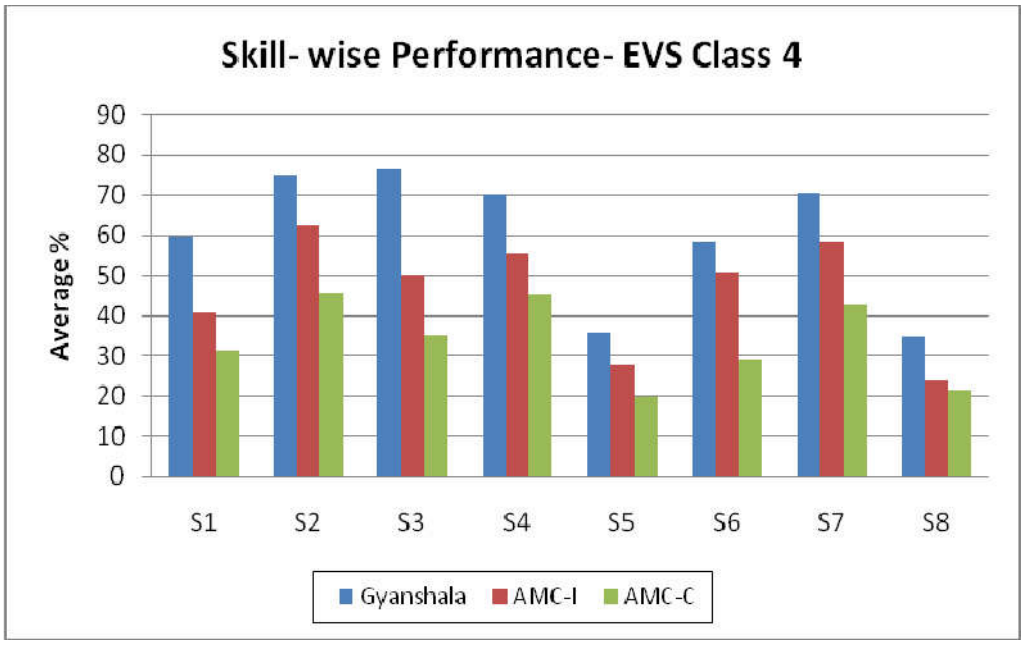
Class 4 Maths:



S1	Number Concepts and relationships
S2	Operations on whole numbers
S3	Fractions and Decimals
S4	Measurement, Data Interpretation/Analysis: averages, percentage, graph reading, etc
S5	Basic Shapes, Geometry and Visual estimation - concepts and applications
S6	Applications in daily life; Word / Visual Problems; Problem Solving

The performance of AMC-Control schools was lower than the intervention schools in all the skills. For both GS and AMC-I students the easiest skill and most difficult skills continued to be S4- 'Measurement, Data Interpretation/Analysis: averages, percentage, graph reading, etc' and S5- 'Fractions and Decimals', respectively.

Class 4 EVS:



S1	Recall of facts (textbook)
S2	Recall of facts (general awareness)
S3	Observation
S4	Classification, identification, pattern recognition
S5	Reasoning and analysis
S6	Interpreting visual information
S7	Estimation and measurement
S8	Design of experiments, drawing conclusions, generalisation, verification

The performance of AMC-Control schools was lower than the intervention schools in all the skills. The easiest skill for GS students was S3- 'Observation' and for the AMC- I students was S2- 'Recall of facts (general awareness)'. The most difficult skill for both the groups was S5 – 'reasoning and analysis'

6. Comparison with Other Studies Done by EI:

This section of the report looks at the performance of the Gyan Shala Project students on COMMON questions across major studies undertaken by EI. The comparison is only to be used as indicative of achievement levels and not meant to comment on the impact of the Gyan Shala program as different students may have been at different levels to start with.

Comparison with Municipal Schools Benchmarking (MSB) Study- Class 2

This was a study undertaken in Municipal Schools across 5 states (Andhra Pradesh, Gujarat, Chhattisgarh, Rajasthan and Uttarakhand) covering 35000 students in 30 cities. Class 2 paper of MSB study was given to Gyan Shala students. A comparison of Gujarat municipal schools performance and Gyan Shala and AMC schools performance was made on identical questions to know how students of different groups are performing.

Class	Question	Study	Performance Percentage (%)
2	Write the answer: 5 - 1 = _____	Gyan Shala March 2009	GS - 86.8
			AMC - I - 57.2
			AMC - C- 47.1
		Gyan Shala March 2010	GS - 92.9
			AMC - I – 54.8
			AMC - C- 30.0
		Municipal Schools Benchmarking Study	Gujarat- 33.3
2	Tick the shape that is different from the others: 	Gyan Shala March 2009	GS - 94.6
			AMC - I - 70.4
			AMC - C- 63.3
		Gyan Shala March 2010	GS – 91.8
			AMC - I – 72.7
			AMC - C- 41.0
		Municipal Schools Benchmarking Study	Gujarat- 43.6
2	Write the word I call out 	Gyan Shala March 2009	GS - 60.7
			AMC - I - 42.3
			AMC - C- 47.4
		Gyan Shala March 2010	GS – 84.0
			AMC - I – 54. 3
			AMC - C- 43.1
		Municipal Schools Benchmarking Study	Gujarat- 32.5
2	Write the word/sentence I call out 	Gyan Shala March 2009	GS -67.7
			AMC - I - 50.2
			AMC - C- 43.0
		Gyan Shala March 2010	GS – 88.1
			AMC - I – 53.4
			AMC - C- 28.1
		Municipal Schools Benchmarking Study	Gujarat- 31.9

The performance of Gyan Shala, AMC-Intervention students was higher than that of the MSB students of Gujarat in both 2009 and 2010.

Comparison with UNICEF Study - Class 3

UNICEF Quality Package (UNICEF QP) Intervention had the learning levels measured by Educational Initiatives in the year 2006- 2007 across 13 states including Gujarat. These were government school students belonging to rural and urban districts of India. Same test paper was administered to measure the student achievement level in UNICEF QP study and Gyan Shala program schools.

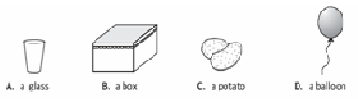
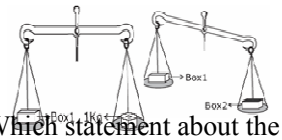
Class	Question	Study	Performance Percentage (%)
3	Solve: 7 + 70	Gyan Shala March 2009	GS - 83.4
			AMC - I - 51.8
			AMC - C- 42.4
		Gyan Shala March 2010	GS – 80.1
			AMC - I – 56.0
			AMC - C- 40.8
		Unicef QP - 2007	Gujarat- 47.7
3	Solve: 10 X 6	Gyan Shala March 2009	GS - 92.2
			AMC - I - 66.3
			AMC - C- 63.4
		Gyan Shala March 2010	GS – 93.3
			AMC - I -60.7
			AMC - C- 36.6
		Unicef QP - 2007	Gujarat- 48.5
3	Tick (√) the sentence that matches the picture  A. It is standing B. She is eating C. They are working D. He is crying	Gyan Shala -March 2009	GS - 93.0
			AMC - I - 80.0
			AMC - C- 70.9
		Gyan Shala March 2010	GS – 95.8
			AMC - I – 85.2
			AMC - C- 62.2
		Unicef QP - 2007	Gujarat- 41.7

Gyan Shala and AMC-Intervention schools continued to perform better in 2010 than rural and urban students of Gujarat tested under the UNICEF project.

Comparison with International Studies- ASSL and TIMSS: Class 4 Maths

In the class 4 Maths paper a few anchoring questions were taken from two international studies - Trends In International Mathematics and Science Study (TIMSS); and EI's Annual Status of Student Learning (ASSL) study covering 40,000 students in Bhutan.

In 2 out of 3 common questions, the Gyan Shala schools performed better than Bhutan school; however performance was lower than TIMMS participating schools in all 3 common questions in 2010. In 2010, the AMC-Intervention schools performed lower than Bhutan schools in 2 out of 3 common questions, and lower than TIMMS participating students in all 3 common questions.

Class	Question	Study	Performance Percentage (%)
4	What is 3 times 23? A. 323 B.233 C. 69 D. 26	Gyan Shala - March 2009	GS - 40.1
			AMC - I - 17.4
			AMC - C- 11.5
		Gyan Shala - March 2010	GS – 68.9
			AMC - I – 39.8
			AMC - C- 22.3
		ASSL	Bhutan Government Schools- 43.6
		TIMSS	International Schools- 80.4
4	Which of the following things can you use to draw an exact circle on paper?  	Gyan Shala- March 2009	GS - 17.4
			AMC - I - 18.6
			AMC - C- 14.1
		Gyan Shala - March 2010	GS – 78.6
			AMC - I – 36.0
			AMC - C- 20.9
		ASSL	Bhutan Government Schools- 25.9
		TIMSS	International Schools- 53.9
4	Look at the weighing scales shown below.  Which statement about the weight of BOX 2 is true? A. It is equal to 1 kg B. It is more than 1 kg C. It is less than 1 kg D. It is equal to 500 g	Gyan Shala - March 2009	GS - 41.3
			AMC - I - 20.6
			AMC - C- 17.6
		Gyan Shala - March 2010	GS - 48.7
			AMC - I – 32.7
			AMC - C- 22.9
		ASSL	Bhutan Government Schools- 32.5
		TIMSS	International Schools- 52.2

Comparison with International Studies - PIRLS: Class 4 Language

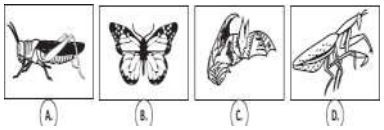
Few anchor questions were taken from Progress in International Reading Literacy Study (PIRLS) to compare the performance of international students with Gyan Shala. PIRLS measures the reading achievement and reading behaviours and attitudes of fourth-grade students in participating countries.
Although the performance of the intervention schools has improved from 2009 to 2010 on the common questions, it was still below that of PIRLS participating students in most cases.

Class	Question	Study	Performance Percentage (%)
4	Why did Labon want to get rid of the mice? A. He had always hated mice. B. There were too many of them. C. They laughed too loudly. D. They ate all his cheese.	Gyan Shala - March 2009	GS – 65.7
			AMC - I – 34.8
			AMC - C- 24.6
		Gyan Shala March 2010	GS – 86.2
			AMC - I - 42.9
			AMC - C- 36.2
		PIRLS	International Students -79.0
4	Where did Labon put the mice when he picked them up from the floor? (answer in a word/phrase) _____	Gyan Shala - March 2009	GS – 43.1
			AMC - I – 16.6
			AMC - C- 11.0
		Gyan Shala March 2010	GS – 67.4
			AMC - I – 25.3
			AMC - C- 10.8
		PIRLS	International Students -84.0
4	Which words best describes this story? A. serious and sad B. scary and exciting C. funny and clever D. thrilling and mysterious	Gyan Shala - March 2009	GS– 47.2
			AMC - I – 30.3
			AMC - C- 28.6
		Gyan Shala March 2010	GS – 74.5
			AMC - I – 40.5
			AMC - C- 38.9
		PIRLS	International Students -78.0

Comparison with Municipal Schools Benchmarking (MSB) Study & TIMSS – Class 4 EVS

Class	Question	Study	Performance Percentage (%)
4	Which among these eats only grass and plants? A. an elephant B. a tiger C. a snake D. a pigeon	Gyan Shala March 2009	GS – 88.8
			AMC - I – 79.1
			AMC - C- 74.6
		Gyan Shala March 2010	GS – 94.6
			AMC - I – 87.5
			AMC - C- 80.0
		Municipal Schools Benchmarking Study	Gujarat- 55.3
4	Which of these is the farthest distance from you? A. Clouds. B. Flying crow C. Sun D. Moon.	Gyan Shala March 2009	GS – 31.8
			AMC - I – 26.7
			AMC - C- 31.3
		Gyan Shala March 2010	GS – 37.5
			AMC - I – 44.5
			AMC - C- 26.7
		Municipal Schools Benchmarking Study	Gujarat- 32.3
4	Seema wants to find out who is the youngest student in her class to wear	Gyan Shala March 2009	GS – 19.0
			AMC - I – 20.9

In general, the performance of the intervention school students was better than the MSB study schools. However the performance was lower than TIMMS participating students.

	spectacles. She can get this answer by asking: A. all students whether they wear spectacles B. students wearing spectacles their date of birth C. students wearing spectacles since when they are wearing it D. all students their age.		AMC - C- 18.2
		Gyan Shala March 2010	GS – 27.5
			AMC - I – 21.1
			AMC - C- 17.4
		Municipal Schools Benchmarking Study	Gujarat- 37.7
4	What covers most of the Earth's surface? A. Water B. Bare rock C. Farm land D. Cities and Towns	Gyan Shala March 2009	GS- 28.9
			AMC - I - 16.6
			AMC - C- 18.2
		Gyan Shala March 2010	GS – 50.0
			AMC - I – 27.8
			AMC - C- 22.6
		TIMSS	International schools- 68.0
4	How can washing your hands help keep you from getting sick? A. It washes away germs. B. It makes your hands look nice. C. It keeps your skin from drying out. D. It makes your hands warmer.	Gyan Shala March 2009	GS- 52.5
			AMC - I - 32.4
			AMC - C- 25.6
		Gyan Shala March 2010	GS – 67.1
			AMC - I – 42.8
			AMC - C- 28.1
		TIMSS	International schools- 86.0
4	When this caterpillar  becomes an adult, what will it look like? 	Gyan Shala March 2009	GS- 9.5
			AMC - I - 14.0
			AMC - C- 11.8
		Gyan Shala March 2010	GS – 6.3
			AMC - I - 19.3
			AMC - C- 16.2
		TIMSS	International schools- 85.0
4	The Moon produces no light, and yet it shines at night. Why is this? A. The Moon reflects the light from the Sun. B. The Moon rotates at a very high speed. C. The Moon is covered with a thin layer of ice. D. The Moon has many craters.	Gyan Shala March 2009	GS- 39.3
			AMC - I - 30.4
			AMC - C- 25.3
		Gyan Shala March 2010	GS – 25.8
			AMC - I – 17.5
			AMC - C- 2.4
		TIMSS	International schools- 70.0

Comparison with Other Project Schools

There were 6 common questions in Language between Gyan Shala papers, Vidya Bhavan and Bodh papers; and 3 common questions in Maths between these projects. The comparison below is not to be considered as impact comparisons as the students in the different projects may have been at different ability levels to start with. However, it gives a glimpse of types of achievement levels seen in the schools and may be useful.

Question	GS				Bodh		VB		
	GS-2009	AMC-I-2009	GS-2010	AMC-I-2010	BRS	Govt-BI	Govt-VBI	Pvt-VBI	VB
Write the name for the picture. <pic of pineapple>	82.3	65.2	92.9	84.3	97.0	83.3	72.9	82.8	78.3

Write a sentence about this picture.	43.8	35.6	87.7	59.6	83.2	45.4	48.7	49.9	54.6
Which season of the year was it in the story? A. Winter B. Summer C. Monsoon D. Cannot say from the information given	97.6	69.3	95.4	86.9	98.2	80.4	69.3	82.3	90.2
What were Akbar and Birbal doing in the palace gardens? A. playing B. counting crows C. sitting D. walking	78.2	49.9	75.3	65.4	88.5	51.5	30.7	45.3	41.3
Akbar wanted to know the number of crows in his_____. A. garden B. kingdom C. palace D. neighbouring kingdom	60.1	33.3	79.5	55.4	89.1	58.4	48.4	54.2	70.7
How do you think could Birbal give an exact number of crows to Akbar? A. He quickly counted the number of crows playing around. B. He simply guessed the right number of crows in the kingdom. C. He gave a large number that he knew could not be exactly counted. D. He remembered it from the books he had read.	35.5	23.3	51.0	22.6	67.3	39.9	40.5	49.0	40.2
What does the story show us in the end? A.Akbar's concern for the crows B. Crows can be counted C. Crows travel during holidays D. Birbal's ready wit	19.0	20.9	52.7	40.8	84.2	46.5	32	40.1	35.9

GS – Gyan Shala Schools
AMC-I - AMC schools with Gyan Shala's Intervention Bodh – 'Bodh Shiksha Samiti' Resource Schools
Govt-BI - Government Schools with Bodh's Intervention VB - Vidya Bhavan Schools
Govt-VBI - Government schools with Vidya Bhavan's Intervention Pvt -VBI- Private schools with Vidya Bhavan's Intervention

7. Way Forward

- Student interviews can be conducted to understand the misconceptions the students are facing in Maths and Language.
- In Language, students need to be exposed more to reading text and interpreting it, as the data is showing that although students are reading a given text, they are not able to answer questions which require them to draw inferences from a given text.
- In Maths, more attention needs to be given on ensuring that the students understand the basic concepts. This can be done by applying maths to everyday activities and helping the child with experiential learning.