

Appendix D – State Level Statistics for All Papers

Class-4 Language

S. No	State	N	AVG	SD	Standard Error	Significance	Cohen's d	Effect Size Interpretation
1	Delhi	935	73.7	16.7	0.545	YES	0.817	Large
2	Kerala	1193	70.0	19.9	0.576	YES	0.658	Medium
3	Orissa	775	64.1	22.5	0.809	YES	0.401	Medium
4	Maharashtra	3981	63.1	17.8	0.281	YES	0.358	Small
5	Tamil Nadu	3170	61.2	18.8	0.333	YES	0.278	Small
6	Chhattisgarh	729	60.7	20.8	0.77	YES	0.254	Small
7	Karnataka	1877	58.5	19.0	0.439	YES	0.159	
8	Uttarakhand	982	58.1	20.9	0.666	YES	0.141	
9	Punjab	1071	57.4	18.8	0.574	YES	0.110	
10	National	29578	54.8	23.1	0.134			
11	Andhra Pradesh	2365	52.1	20.6	0.423	YES	0.117	
12	Chandigarh *	1404	51.0	20.3	0.541	YES	0.168	
13	Gujarat	1692	50.8	22.7	0.552	YES	0.173	
14	Haryana	1185	50.5	25.1	0.728	YES	0.186	
15	Bihar	2549	49.5	24.0	0.476	YES	0.231	Small
16	Jharkhand	1005	48.2	22.3	0.703	YES	0.288	Small
17	Assam	587	47.1	23.4	0.968	YES	0.334	Small
18	Madhya Pradesh	2058	41.9	26.4	0.581	YES	0.562	Medium
19	Rajasthan	1566	40.9	23.0	0.581	YES	0.603	Medium
20	Jammu and Kashmir	454	19.0	12.9	0.607	YES	1.555	Large

N - Number of students; AVG – Average Score; SD – Standard deviation; Statistical Significance at 95%; Cohen's d –Large: >0.8, Medium:>0.5, Small >0.2 * - Union Territory

Class-6 Language

S. No	State	N	AVG	SD	Standard Error	Significance	Cohen's d	Effect Size Interpretation
1	Kerala	1536	72.9	18.6	0.4753	YES	1.117	Large
2	Maharashtra	3943	60.5	16.7	0.2653	YES	0.547	Medium
3	Chandigarh *	760	58.0	13.8	0.5001	YES	0.435	Medium
4	Punjab	1351	57.8	16.8	0.4567	YES	0.428	Medium
5	Orissa	1281	55.5	22.7	0.6338	YES	0.321	Small
6	Karnataka	2047	55.1	18.5	0.4084	YES	0.301	Small
7	Tamil Nadu	3203	51.2	19.8	0.3499	YES	0.123	
8	Uttarakhand	1257	50.2	19.0	0.5347	YES	0.079	
9	Haryana	1431	49.4	19.9	0.5262	NO		
10	National	35945	48.5	21.9	0.1154			
11	Gujarat	1641	47.6	20.7	0.5114	NO		
12	Bihar	2734	46.8	21.7	0.4152	YES	0.077	
13	Jharkhand	1269	46.0	19.7	0.5524	YES	0.114	
14	Andhra Pradesh	3789	45.7	18.8	0.3054	YES	0.127	
15	Chhattisgarh	1788	42.6	19.4	0.4579	YES	0.270	Small
16	Assam	1060	41.5	20.7	0.6364	YES	0.319	Small
17	Madhya Pradesh	3294	37.4	21.6	0.3758	YES	0.506	Medium
18	Rajasthan	2618	35.9	19.0	0.3719	YES	0.576	Medium
19	Jammu and Kashmir	943	14.4	8.4	0.274	YES	1.557	Large

N - Number of students; AVG – Average Score; SD – Standard deviation; Statistical Significance at 95%; Cohen's d –Large: >0.8, Medium:>0.5, Small >0.2 * - Union Territory

Class-8 Language

S. No	State	N	AVG	SD	Standard Error	Significance	Cohen's d	Effect Size Interpretation
1	Kerala	1313	74.7	13.2	0.3641	YES	1.118	Large
2	Chandigarh *	756	64.5	13.2	0.48	YES	0.580	Medium
3	Haryana	1421	61.5	15.1	0.4014	YES	0.424	Medium
4	Karnataka	1879	59.0	14.5	0.3336	YES	0.293	Small
5	Punjab	1288	58.7	14.3	0.399	YES	0.277	Small
6	Orissa	1309	57.4	19.3	0.5334	YES	0.209	Small
7	Gujarat	2276	57.2	18.2	0.3812	YES	0.198	
8	Uttarakhand	1390	56.8	17.3	0.4628	YES	0.177	
9	Maharashtra	4151	55.8	18.7	0.2907	YES	0.124	
10	National	36120	53.5	19.1	0.1002			
11	Bihar	2347	53.2	20.1	0.4148	No		
12	Tamil Nadu	3452	52.5	17.4	0.2957	YES	0.052	
13	Rajasthan	2853	51.2	17.5	0.3275	YES	0.119	
14	Assam	920	50.1	20.9	0.6891	YES	0.176	
15	Jharkhand	1270	50.0	19.1	0.5364	YES	0.179	
16	Madhya Pradesh	2754	48.2	18.8	0.3589	YES	0.274	Small
17	Chhattisgarh	2194	47.9	17.2	0.3669	YES	0.292	Small
18	Andhra Pradesh	3782	47.5	16.8	0.2729	YES	0.310	Small
19	Jammu and Kashmir	765	19.0	8.1	0.2914	YES	1.808	Large

N - Number of students; *AVG* – Average Score; *SD* – Standard deviation; *Statistical Significance* at 95%; *Cohen's d* –Large: >0.8, Medium:>0.5, Small >0.2 * - Union Territory

Class-4 Maths

S. No	State	N	AVG	SD	Standard Error	Significance	Cohen's d	Effect Size Interpretation
1	Delhi	915	70.3	14.7	0.487	YES	0.630	Medium
2	Maharashtra	3975	69.9	17.7	0.281	YES	0.613	Medium
3	Orissa	775	66.0	21.8	0.781	YES	0.433	Medium
4	Kerala	1200	65.1	19.4	0.561	YES	0.392	Medium
5	Karnataka	1877	63.8	20.3	0.468	YES	0.333	Small
6	Chandigarh *	729	58.9	18.7	0.692	YES	0.108	
7	Tamil Nadu	3169	58.6	17.3	0.307	YES	0.096	
8	Uttarakhand	974	57.9	20.8	0.666	YES	0.064	
9	National	29513	56.5	21.9	0.127			
10	Punjab	1069	55.4	18.4	0.563	No		
11	Haryana	1185	53.7	20.9	0.609	YES	0.130	
12	Bihar	2533	53.2	21.3	0.424	YES	0.153	
13	Andhra Pradesh	2350	53.1	17.8	0.368	YES	0.157	
14	Jharkhand	1000	52.8	20.2	0.64	YES	0.170	
15	Chhattisgarh	1405	52.2	19.3	0.514	YES	0.199	Small
16	Assam	587	50.2	22.0	0.907	YES	0.290	Small
17	Gujarat	1692	48.9	21.5	0.523	YES	0.351	Small
18	Rajasthan	1566	45.2	24.1	0.608	YES	0.518	Medium
19	Madhya Pradesh	2058	42.5	25.0	0.551	YES	0.644	Medium
20	Jammu and Kashmir	454	29.1	17.5	0.821	YES	1.255	Large

N - Number of students; *AVG* – Average Score; *SD* – Standard deviation; *Statistical Significance* at 95%; *Cohen's d* –Large: >0.8, Medium:>0.5, Small >0.2 * - Union Territory

Class-6 Maths

S. No	State	N	AVG	SD	Standard Error	Significance	Cohen's d	Effect Size Interpretation
1	Maharashtra	3898	61.6	21.2	0.3399	YES	0.781	Large
2	Karnataka	2047	61.4	20.2	0.4463	YES	0.772	Large
3	Kerala	1533	60.1	18.6	0.475	YES	0.713	Large
4	Orissa	1246	53.9	21.6	0.6126	YES	0.433	Medium
5	Chandigarh *	760	52.4	14.5	0.5244	YES	0.362	Small
6	Jharkhand	1221	46.7	20.4	0.5838	YES	0.105	
7	Haryana	1431	46.6	19.7	0.5219	YES	0.101	
8	Bihar	2721	46.6	20.1	0.3852	YES	0.099	
9	Punjab	1311	45.7	15.1	0.4158	YES	0.059	
10	Tamil Nadu	3184	45.4	19.5	0.3451	YES	0.045	
11	National	35604	44.4	22.0	0.1166			
12	Uttarakhand	1245	44.2	18.9	0.5358	NO		
13	Assam	1061	38.9	20.2	0.6194	YES	0.248	Small
14	Andhra Pradesh	3734	36.8	17.3	0.2824	YES	0.345	Small
15	Chhattisgarh	1717	36.2	18.2	0.4386	YES	0.374	Small
16	Gujarat	1641	34.9	18.9	0.4667	YES	0.433	Medium
17	Rajasthan	2618	32.9	19.0	0.3709	YES	0.521	Medium
18	Madhya Pradesh	3294	30.2	18.7	0.3254	YES	0.643	Medium
19	Jammu and Kashmir	943	14.4	8.4	0.274	YES	1.557	Large

N - Number of students; AVG – Average Score; SD – Standard deviation; Statistical Significance at 95%; Cohen's d –Large: >0.8, Medium:>0.5, Small >0.2 * - Union Territory

Class-8 Maths

S. No	State	N	AVG	SD	Standard Error	Significance	Cohen's d	Effect Size Interpretation
1	Kerala	1303	45.6067	14.4	0.4000	YES	0.664	Medium
2	Orissa	1293	45.3813	17.5	0.4859	YES	0.649	Medium
3	Karnataka	1879	43.7922	18.9	0.4358	YES	0.546	Medium
4	Maharashtra	4145	41.6625	17.3	0.2694	YES	0.409	Medium
5	Chandigarh *	756	40.1714	10.8	0.3919	YES	0.312	Small
6	Haryana	1421	38.9197	12.6	0.3336	YES	0.231	Small
7	Bihar	2331	37.1573	16.5	0.3425	YES	0.117	
8	Punjab	1266	37.1386	11.4	0.3209	YES	0.116	
9	Uttarakhand	1389	36.5073	13.0	0.3488	YES	0.075	
10	National	35967	35.3	15.5	0.08149			
11	Jharkhand	1273	35.1762	14.1	0.3965	NO		
12	Rajasthan	2853	35.0482	14.8	0.2766	NO		
13	Tamil Nadu	3448	33.8432	12.7	0.2163	YES	0.097	
14	Gujarat	2276	32.7836	14.2	0.2981	YES	0.166	
15	Assam	916	31.6072	15.0	0.4951	YES	0.242	Small
16	Andhra Pradesh	3724	29.657	12.1	0.1986	YES	0.368	Small
17	Madhya Pradesh	2754	28.3458	12.6	0.2394	YES	0.453	Medium
18	Chhattisgarh	2191	27.4595	11.6	0.2477	YES	0.511	Medium
19	Jammu and Kashmir	749	19.5119	8.4	0.3071	YES	1.025	Large

N - Number of students; AVG – Average Score; SD – Standard deviation; Statistical Significance at 95%; Cohen's d –Large: >0.8, Medium:>0.5, Small >0.2 * - Union Territory

Appendix E – Multiple Comparisons of Average Achievement for States

Class-4 Language	Comparison States																			
	Delhi	Kerala	Orissa	Maharashtra	Tamil Nadu	Chandigarh *	Karnataka	Uttarakhand	Punjab	Andhra Pradesh	Chhattisgarh	Gujarat	Haryana	Bihar	Jharkhand	Assam	Madhya Pradesh	Rajasthan	Jammu and Kashmir	
Delhi		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Kerala	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Orissa	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Maharashtra	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Tamil Nadu	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Chandigarh *	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Karnataka	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Uttarakhand	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Punjab	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Andhra Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Chhattisgarh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Gujarat	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Haryana	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*
Bihar	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*
Jharkhand	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*
Assam	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*
Madhya Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*
Rajasthan	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*
Jammu and Kashmir	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*

* The mean difference is significant at the .05 level.

Legend:

▲* - Average achievement of State in column I is significantly higher than comparison State (e.g., Tamil Nadu is significantly higher than Rajasthan)

▼* - Average achievement of State in column I is significantly lower than comparison State (e.g., Tamil Nadu is significantly lower than Kerala)

▲ - Average achievement of State in column I is higher than comparison State, but not significant (e.g., Tamil Nadu is higher than Chandigarh)

▼ - Average achievement of state in column I is lower than comparison State, but not significant (e.g., Tamil Nadu is lower than Orissa)

Class-4 Maths	Comparison States																			
	Delhi	Maharashtra	Orissa	Kerala	Karnataka	Chandigarh	Tamil Nadu	Uttarakhand	Punjab	Haryana	Bihar	Andhra Pradesh	Jharkhand	Chhattisgarh	Assam	Gujarat	Rajasthan	Madhya Pradesh	Jammu and Kashmir	
Delhi		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Maharashtra	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Orissa	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Kerala	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Karnataka	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Chandigarh	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Tamil Nadu	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Uttarakhand	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Punjab	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Haryana	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Bihar	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Andhra Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Jharkhand	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*
Chhattisgarh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*
Assam	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*	▲*
Gujarat	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*	▲*
Rajasthan	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*	▲*
Madhya Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	▲*
Jammu and Kashmir	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*

* The mean difference is significant at the .05 level.

Legend:

▲* - Average achievement of State in column I is significantly higher than comparison State

▼* - Average achievement of State in column I is significantly lower than comparison State

▲ - Average achievement of State in column I is higher than comparison State, but not significant

▼ - Average achievement of State in column I is lower than comparison State, but not significant

Class-6 Language	Comparison States																		
	Kerala	Maharashtra	Chandigarh *	Punjab	Orissa	Karnataka	Tamil Nadu	Uttarakhand	Haryana	Gujarat	Bihar	Jharkhand	Andhra Pradesh	Chhattisgarh	Assam	Madhya Pradesh	Rajasthan	Jammu and Kashmir	
Kerala		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Maharashtra	▼*		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Chandigarh *	▼*	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Punjab	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Orissa	▼*	▼*	▼	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Karnataka	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Tamil Nadu	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Uttarakhand	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Haryana	▼*	▼*	▼*	▼*	▼*	▼*	▼	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Gujarat	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Bihar	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	
Jharkhand	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	▲*	
Andhra Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	
Chhattisgarh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲*	▲*	▲*	
Assam	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	
Madhya Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲*	
Rajasthan	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲*	
Jammu and Kashmir	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		

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Class-6 Maths	Comparison States																		
	Maharashtra	Karnataka	Kerala	Orissa	Chandigarh *	Jharkhand	Haryana	Bihar	Punjab	Tamil Nadu	Uttarakhand	Assam	Andhra Pradesh	Chhattisgarh	Gujarat	Rajasthan	Madhya Pradesh	Jammu and Kashmir	
Maharashtra		▲	▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Karnataka	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Kerala	▼	▼		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Orissa	▼*	▼*	▼*		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Chandigarh *	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Jharkhand	▼*	▼*	▼*	▼*	▼*		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Haryana	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Bihar	▼*	▼*	▼*	▼*	▼*	▼	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Punjab	▼*	▼*	▼*	▼*	▼*	▼	▼	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Tamil Nadu	▼*	▼*	▼*	▼*	▼*	▼	▼	▼	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	
Uttarakhand	▼*	▼*	▼*	▼*	▼*	▼	▼	▼*	▼	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	
Assam	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲*	▲*	▲*	▲*	▲*	
Andhra Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	▲*	
Chhattisgarh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	▲*	
Gujarat	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	▲*	
Rajasthan	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼		▲	▲*	
Madhya Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲*	
Jammu and Kashmir	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		

* The mean difference is significant at the .05 level.

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- ▲* - Average achievement of State in column I is significantly higher than comparison State
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Class-8 Language	Comparison States																	
	Kerala	Chandigarh *	Haryana	Karnataka	Punjab	Orissa	Gujarat	Uttarakhand	Maharashtra	Bihar	Tamil Nadu	Rajasthan	Assam	Jharkhand	Madhya Pradesh	Chhattisgarh	Andhra Pradesh	Jammu and Kashmir
Kerala		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Chandigarh *	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Haryana	▼*	▼*		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Karnataka	▼*	▼*	▼*		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Punjab	▼*	▼*	▼*	▼		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Orissa	▼*	▼*	▼*	▼	▼		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Gujarat	▼*	▼*	▼*	▼	▼	▼		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Uttarakhand	▼*	▼*	▼*	▼*	▼	▼	▼		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Maharashtra	▼*	▼*	▼*	▼*	▼*	▼	▼	▼		▲	▲	▲	▲	▲	▲	▲	▲	▲
Bihar	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲	▲	▲	▲	▲
Tamil Nadu	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲	▲	▲	▲
Rajasthan	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲	▲	▲
Assam	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲	▲
Jharkhand	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲
Madhya Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲
Chhattisgarh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲
Andhra Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲
Jammu and Kashmir	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	

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Class-8 Maths	Comparison States																	
	Kerala	Orissa	Karnataka	Maharashtra	Chandigarh *	Haryana	Bihar	Punjab	Uttarakhand	Jharkhand	Rajasthan	Tamil Nadu	Gujarat	Assam	Andhra Pradesh	Madhya Pradesh	Chhattisgarh	Jammu and Kashmir
Kerala		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Orissa	▼		▲	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Karnataka	▼*	▼		▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*	▲*
Maharashtra	▼*	▼*	▼*		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Chandigarh *	▼*	▼*	▼*	▼		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Haryana	▼*	▼*	▼*	▼*	▼		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Bihar	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Punjab	▼*	▼*	▼*	▼*	▼*	▼	▼		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
Uttarakhand	▼*	▼*	▼*	▼*	▼*	▼*	▼	▼		▲	▲	▲	▲	▲	▲	▲	▲	▲
Jharkhand	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼	▼		▲	▲	▲	▲	▲	▲	▲	▲
Rajasthan	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲	▲	▲	▲
Tamil Nadu	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲	▲	▲
Gujarat	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲	▲
Assam	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲	▲
Andhra Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲	▲
Madhya Pradesh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲	▲
Chhattisgarh	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*		▲
Jammu and Kashmir	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	▼*	

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Appendix F - State Wise Rural and Urban Statistics for All Papers

Class-4 Language

S. No	State	Rural			Urban			Significance
		N	AVG	SD	N	AVG	SD	
1	National	21635	53.3	23.5	7212	58.9	21.3	
2	Andhra Pradesh	1619	50.9	21.2	746	54.7	18.9	0.000*
3	Assam	496	45.5	23.5	91	55.7	21.2	0.000*
4	Bihar	1969	49.5	23.6	580	49.6	25.3	0.900
5	Chhattisgarh	1175	51.7	20.0	229	46.9	20.8	0.001*
6	Delhi	112	66.8	20.2	823	74.6	15.9	0.000*
7	Gujarat	1206	51.0	23.1	484	50.5	21.8	0.649
8	Haryana	1064	49.3	25.3	121	61.2	19.9	0.000*
9	Jammu and Kashmir	396	18.9	13.3	58	19.4	10.2	0.728
10	Jharkhand	888	48.9	22.4	117	42.8	20.9	0.004*
11	Karnataka	824	55.4	20.8	1053	60.9	17.1	0.000*
12	Kerala	1029	69.5	20.1	164	72.9	17.9	0.030*
13	Madhya Pradesh	1555	37.9	26.4	503	54.0	22.3	0.000*
14	Maharashtra	3454	64.5	17.3	527	54.0	18.2	0.000*
15	Orissa	555	62.9	23.3	220	67.1	19.9	0.013*
16	Punjab	924	56.3	18.6	147	64.0	18.2	0.000*
17	Rajasthan	1404	39.8	22.9	162	50.4	21.0	0.000*
18	Tamil Nadu	2116	59.5	19.3	1054	64.6	17.2	0.000*
19	Uttarakhand	849	57.6	20.7	133	60.8	21.5	0.113

Class-4 Maths

S. No	State	Rural			Urban			Significance
		N	AVG	SD	n	AVG	SD	
1	National	21598	55.9	22.6	7184	58.4	19.8	
2	Andhra Pradesh	1614	53	18.6	736	53.3	16.1	0.687
3	Assam	496	50.1	23	91	50.8	15	0.722
4	Bihar	1958	53	21.3	575	53.8	21.4	0.448
5	Chhattisgarh	1174	53.5	18.6	231	45.4	21	0.000*
6	Delhi	104	65.8	15.3	811	70.9	14.6	0.002*
7	Gujarat	1206	49.9	22.1	484	46.3	19.9	0.001*
8	Haryana	1064	53.2	21.2	121	58.2	17.7	0.005*
9	Jammu and Kashmir	396	28.3	17.5	58	34.9	16.4	0.006*
10	Jharkhand	883	54.3	19.4	117	41.6	22.6	0.000*
11	Karnataka	824	63.2	22.9	1053	64.3	17.9	0.280
12	Kerala	1038	64.9	19.7	162	66.4	17.8	0.318
13	Madhya Pradesh	1555	39.5	25.4	503	51.7	21.1	0.000*
14	Maharashtra	3448	70.8	17.6	527	64.0	17.7	0.000*
15	Orissa	555	66.4	22.3	220	65	20.1	0.398
16	Punjab	922	55.2	18.6	147	57	16.9	0.224
17	Rajasthan	1404	45	24.1	162	46.9	23.6	0.354
18	Tamil Nadu	2116	57.8	18	1053	60.4	15.6	0.000*
19	Uttarakhand	841	57.5	21.1	133	60.9	18.2	0.048*

Class-6 Language

S. No	State	Rural			Urban			Significance
		N	AVG	SD	n	AVG	SD	
1	National	28041	47.2	22.3	7144	52.6	20.2	
2	Andhra Pradesh	2928	44.8	18.8	861	48.7	18.4	0.000*
3	Assam	923	39.6	20.8	137	54.2	15.1	0.000*
4	Bihar	2492	46.5	21.7	242	49.7	21.5	0.027*
5	Chhattisgarh	1488	40.6	18.9	300	52.3	18.5	0.000*
6	Gujarat	1190	47.3	21.0	451	48.6	20	0.214
7	Haryana	1306	48.9	20.3	125	54.2	14.3	0.000*
8	Jammu and Kashmir	839	14.5	8.4	104	13.8	8.3	0.401
9	Jharkhand	1175	46.5	19.7	94	39.4	18.1	0.001*
10	Karnataka	917	53.1	20.3	1130	56.7	16.6	0.000*
11	Kerala	1295	71.8	18.8	241	78.6	16.3	0.000*
12	Madhya Pradesh	2545	35.2	21.5	749	44.8	20.1	0.000*
13	Maharashtra	3298	61.0	16.1	645	57.7	19.2	0.000*
14	Orissa	860	57.2	23.0	421	52.0	21.6	0.000*
15	Punjab	1128	57.0	16.8	223	62.1	16.0	0.000*
16	Rajasthan	2411	34.9	18.7	207	46.9	19.7	0.000*
17	Tamil Nadu	2128	49.5	20.3	1075	54.4	18.3	0.000*
18	Uttarakhand	1118	50.2	19.1	139	50.3	18.1	0.966

Class-6 Maths

S.No	State	Rural			Urban			Significance
		N	AVG	SD	n	AVG	SD	
1	National	27795	43.5	22.4	7049	47.2	20.8	
2	Andhra Pradesh	2893	35.9	17.3	841	40.0	16.6	0.000*
3	Assam	924	37.5	20.3	137	48.9	16.1	0.000*
4	Bihar	2480	46.4	20.1	241	48.8	19.6	0.069
5	Chhattisgarh	1458	34.8	17.2	259	43.7	21.2	0.000*
6	Gujarat	1190	35.5	19.7	451	33.2	16.4	0.018
7	Haryana	1306	46.5	20.1	125	47.9	14.9	0.330
8	Jammu and Kashmir	838	22.8	15.7	104	27.6	12.8	0.003*
9	Jharkhand	1133	47.1	20.6	88.0	41.2	17.2	0.003*
10	Karnataka	917	63.0	20.8	1130	60.0	19.6	0.001
11	Kerala	1293	58.9	18.9	240	66.7	14.9	0.000*
12	Madhya Pradesh	2545	29.1	19.1	749	34.3	16.6	0.000*
13	Maharashtra	3257	62.3	20.8	641	57.7	23.1	0.000*
14	Orissa	837	56.1	21.9	409	49.4	20.3	0.000*
15	Punjab	1091	44.3	14.9	220	52.3	13.9	0.000*
16	Rajasthan	2411	32.7	18.9	207	35.4	20.2	0.061*
17	Tamil Nadu	2112	44.7	20.5	1072	46.7	17.2	0.004*
18	Uttarakhand	1110	44.0	19.1	135	45.4	17.4	0.405

Class-8 Language

S.No	State	Rural			Urban			Significance
		N	AVG	SD	n	AVG	SD	
1	National	26256	52.5	19.4	7983	55.5	17.8	
2	Andhra Pradesh	2719	47.6	17.1	1063	47.4	16.0	0.812
3	Assam	854	49.6	21.4	66	56.9	10.9	0.000*
4	Bihar	2078	52.7	19.9	269	56.6	21.4	0.005*
5	Chhattisgarh	1815	46.3	16.6	379	55.3	18.0	0.000*
6	Gujarat	617	56.8	16.8	534	63.3	17.0	0.000*
7	Haryana	1292	61.2	15.3	129	64.4	12.5	0.008*
8	Jammu and Kashmir	699	19.0	8.1	66	19.3	7.6	0.774
9	Jharkhand	1173	49.7	19.4	97	53.6	15.2	0.023*
10	Karnataka	786	61.2	14.8	1093	57.5	14.0	0.000*
11	Kerala	1096	74.4	13.2	217	76.3	12.9	0.063
12	Madhya Pradesh	2060	46.0	18.6	694	54.9	17.9	0.000*
13	Maharashtra	3018	56.1	19.0	1133	55.0	18.1	0.099
14	Orissa	905	59.4	18.8	404	53.1	19.6	0.000*
15	Punjab	1054	57.8	14.5	234	62.7	12.4	0.000*
16	Rajasthan	2604	50.5	17.3	249	58.7	17.9	0.000*
17	Tamil Nadu	2240	51.8	17.7	1212	53.7	16.6	0.002*
18	Uttarakhand	1246	56.7	17.5	144	58.1	14.9	0.283

Class-8 Maths

S.No	State	Rural			Urban			Significance
		N	AVG	SD	n	AVG	SD	
1	National	26127	35.4	15.8	7959	35.3	14.7	
2	Andhra Pradesh	2697	30.1	12.6	1027	28.4	10.5	0.000*
3	Assam	850	31.4	15.2	66	34.4	11.4	0.117
4	Bihar	2063	36.8	16.2	268	40.2	18.7	0.005*
5	Chhattisgarh	1812	26.4	10.4	379	32.3	15.2	0.000*
6	Gujarat	617	31.1	14.1	534	37.1	14.7	0.000*
7	Haryana	1292	39.5	12.8	129	33.2	8.6	0.000*
8	Jammu and Kashmir	683	19.4	8.4	66	20.9	8.3	0.170
9	Jharkhand	1176	34.8	14.3	97	39.9	10.6	0.000*
10	Karnataka	786	56.7	17.4	1093	34.5	13.8	0.000*
11	Kerala	1087	45.3	14.8	216	47.4	12.4	0.029*
12	Madhya Pradesh	2060	28.3	12.7	694	28.5	12.2	0.709
13	Maharashtra	2990	41.7	17.5	1155	41.5	17.0	0.765
14	Orissa	894	47.3	17.9	399	41.0	15.6	0.000*
15	Punjab	1033	36.8	11.5	233	38.6	11.0	0.029*
16	Rajasthan	2604	34.9	14.9	249	36.5	13.5	0.105
17	Tamil Nadu	2239	33.4	12.4	1209	34.6	13.3	0.015*
18	Uttarakhand	1244	36.5	13.5	145	36.7	7.3	0.801

Appendix G - IRT Parameters for All Questions

Class-4 Language

ITEM	SLOPE	S.E.	LOCATION	S.E.	GUESSING	S.E.
1	16.407	0.125	-1.806	0.005	0.159	0.008
2	1.251	0.028	0.138	0.018	0.356	0.006
3	0.835	0.02	-1.372	0.042	0.033	0.021
4	0.376	0.023	-0.65	0.185	0.005	0.053
5	0.68	0.02	-1.221	0.064	0.042	0.029
6	0.448	0.022	0.616	0.05	0.042	0.016
7	0.694	0.021	-1.851	0.086	0	0.048
8	0.886	0.022	-1.609	0.045	0.007	0.026
9	0.629	0.031	1.373	0.035	0.119	0.007
10	0.919	0.028	-0.49	0.029	0.13	0.011
11	0.762	0.022	-0.889	0.041	0.031	0.018
12	0.804	0.025	-0.246	0.03	0.119	0.01
13	0.526	0.02	0.431	0.036	0.025	0.012
14	0.768	0.011	-1.161	0.012	0	0
15	0.701	0.009	0.711	0.019	0	0
16	0.434	0.003	-0.367	0.009	0	0
17	0.572	0.005	-0.073	0.011	0	0
18	0.458	0.003	0.035	0.01	0	0
19	0.366	0.003	-0.006	0.01	0	0
20	0.731	0.027	0.581	0.027	0.15	0.008
21	1.021	0.01	0.467	0.014	0	0
22	0.344	0.04	3.405	0.189	0.058	0.012
23	0.692	0.01	2.235	0.039	0	0
24	0.434	0.021	0.525	0.051	0	0.017
25	0.15	0.03	-7.398	5.997	0	3.044
26	0.681	0.022	-0.858	0.055	0.107	0.021
27	0.836	0.023	-1.725	0.055	0.054	0.031
28	0.811	0.019	-1.186	0.036	0.013	0.017
29	0.482	0.009	-2.08	0.026	0	0
30	0.733	0.009	0.072	0.015	0	0
31	0.781	0.01	0.695	0.018	0	0
32	0.589	0.006	0.388	0.014	0	0
33	0.634	0.022	-1.728	0.089	0.016	0.043
34	0.593	0.025	-1.1	0.095	0.158	0.035
35	0.492	0.032	-0.308	0.171	0.263	0.039
36	0.357	0.028	-2.94	0.845	0	0.335
37	0.687	0.023	-0.778	0.055	0.119	0.02

Class-6 Language

Item	SLOPE	S.E.	LOCATION	S.E.	GUESSING	S.E.
1	9.569	0.291	0.185	0.007	0.582	0.004
2	1.312	0.038	-2.863	0.134	0.483	0.023
3	0.903	0.026	-0.740	0.033	0.093	0.016
4	0.742	0.031	-2.404	0.211	0.000	0.132
5	0.567	0.028	-0.960	0.150	0.127	0.051
6	11.746	0.236	0.205	0.007	0.476	0.004
7	1.074	0.033	-0.481	0.029	0.236	0.013
8	0.711	0.016	0.964	0.023	0.000	0.000
9	0.909	0.014	-0.108	0.010	0.000	0.000
10	0.929	0.013	-0.479	0.011	0.000	0.000
11	0.919	0.014	-0.094	0.010	0.000	0.000
12	0.595	0.004	-0.879	0.010	0.000	0.000
13	0.546	0.006	0.046	0.008	0.000	0.000
14	0.508	0.005	0.545	0.010	0.000	0.000
15	0.532	0.004	-0.508	0.009	0.000	0.000
16	0.466	0.003	-0.518	0.008	0.000	0.000
17	0.918	0.016	0.472	0.013	0.000	0.000
18	0.574	0.006	0.595	0.010	0.000	0.000
19	0.970	0.023	-0.850	0.036	0.060	0.018
20	0.920	0.025	-0.318	0.023	0.078	0.011
21	0.515	0.024	0.333	0.042	0.000	0.017
22	0.994	0.028	-0.050	0.017	0.068	0.008
23	0.785	0.027	0.468	0.020	0.068	0.008
24	0.985	0.027	-0.445	0.029	0.141	0.013
25	1.208	0.015	-0.848	0.012	0.000	0.000
26	1.129	0.017	0.005	0.009	0.000	0.000
27	0.836	0.016	0.567	0.015	0.000	0.000
28	0.155	0.063	1.815	1.534	0.000	0.224
29	0.773	0.008	-0.100	0.007	0.000	0.000
30	1.323	0.039	0.016	0.016	0.201	0.008
31	0.852	0.020	1.293	0.034	0.000	0.000
32	1.307	0.032	0.179	0.011	0.077	0.005
33	1.075	0.022	0.745	0.017	0.000	0.000
34	0.969	0.022	1.099	0.026	0.000	0.000
35	1.151	0.033	0.221	0.013	0.118	0.006
36	0.522	0.027	-2.702	0.223	0.000	0.110
37	0.746	0.027	-0.277	0.042	0.145	0.017
38	0.970	0.024	-1.100	0.044	0.019	0.023
39	0.976	0.016	0.131	0.011	0.000	0.000
40	1.184	0.016	-0.270	0.010	0.000	0.000
41	1.158	0.016	-0.236	0.010	0.000	0.000
42	1.167	0.032	-1.748	0.019	0.000	0.000
43	0.475	0.027	1.493	0.019	0.000	0.000

Class-8 Language

ITEM	SLOPE	S.E.	LOCATION	S.E.	GUESSING	S.E.
1	0.521	0.017	-0.29	0.066	0.189	0.017
2	1.252	0.01	-5.477	1.36	0	3.19
3	0.517	0.016	-0.554	0.169	0.329	0.044
4	0.492	0.016	-0.689	0.107	0.223	0.028
5	1.328	0.01	-2.952	0.317	0	0.728
6	0.855	0.013	-4.507	0.184	0	0.255
7	0.499	0.016	-1.238	0.107	0.159	0.031
8	0.39	0.006	-1.18	0.02	0	0
9	0.479	0.007	-0.795	0.016	0	0
10	0.511	0.018	-2.546	0.185	0.165	0.078
11	0.244	0.013	-5.575	0.242	0	0.114
12	0.24	0.002	-3.041	0.019	0	0
13	0.184	0.002	-0.666	0.013	0	0
14	0.725	0.018	0.328	0.022	0.117	0.006
15	0.224	0.002	-0.731	0.014	0	0
16	0.204	0.002	-2.015	0.017	0	0
17	0.176	0.001	-1.121	0.014	0	0
18	0.334	0.008	2.466	0.06	0	0
19	0.377	0.015	-1.662	0.147	0.044	0.045
20	0.401	0.016	-1.969	0.151	0	0.044
21	0.476	0.018	-2.602	0.185	0.117	0.076
22	0.559	0.018	-1.721	0.103	0.208	0.032
23	0.401	0.016	0.092	0.09	0.128	0.022
24	0.362	0.014	-0.337	0.09	0.034	0.023
25	0.481	0.026	1.778	0.077	0.221	0.014
26	0.314	0.018	-0.27	0.312	0.225	0.063
27	0.504	0.037	2.206	0.12	0.212	0.008
28	0.493	0.017	0.517	0.039	0.131	0.011
29	0.358	0.016	-2.556	0.231	0	0.07
30	0.897	0.367	2.354	3225.739	0	30.699
31	0.508	0.016	-1.821	0.105	0.072	0.037
32	0.555	0.015	-1.476	0.068	0.065	0.023
33	0.475	0.02	-0.351	0.091	0.315	0.019
34	0.276	0.036	3.017	0.329	0.164	0.036
35	0.601	0.019	0.675	0.027	0.127	0.006
36	0.659	0.017	-1.093	0.041	0.14	0.013
37	0.608	0.019	-0.514	0.044	0.226	0.012
38	0.8	0.017	-1.113	0.027	0.114	0.009
39	0.349	0.016	-0.997	0.178	0.089	0.044
40	0.32	0.044	4.458	0.454	0.083	0.009
41	0.221	0.002	0.416	0.017	0	0
42	0.309	0.003	-1.04	0.012	0	0
43	0.543	0.014	-0.947	0.05	0.077	0.015
44	0.371	0.008	1.989	0.048	0	0
45	0.729	0.018	-0.364	0.025	0.134	0.007
46	0.522	0.009	0.516	0.023	0	0
47	0.448	0.008	1.092	0.033	0	0
48	0.762	0.018	-0.797	0.029	0.144	0.009

Class-4 Maths

ITEM	SLOPE	S.E.	LOCATION	S.E.	GUESSING	S.E.
1	0.908	0.015	-1.856	0.020	0.000	0.000
2	0.795	0.011	-1.161	0.015	0.000	0.000
3	0.527	0.006	-0.386	0.010	0.000	0.000
4	0.965	0.013	-1.018	0.012	0.000	0.000
5	0.680	0.018	0.221	0.028	0.083	0.011
6	0.866	0.012	-0.934	0.012	0.000	0.000
7	0.715	0.011	-1.104	0.016	0.000	0.000
8	0.977	0.012	-0.588	0.010	0.000	0.000
9	0.734	0.017	-1.407	0.050	0.000	0.025
10	0.566	0.015	-0.070	0.037	0.000	0.014
11	0.671	0.013	-2.292	0.033	0.000	0.000
12	0.561	0.010	-1.880	0.029	0.000	0.000
13	0.933	0.013	-1.342	0.015	0.000	0.000
14	0.754	0.011	-1.175	0.016	0.000	0.000
15	0.685	0.010	-1.062	0.016	0.000	0.000
16	0.680	0.010	-0.041	0.011	0.000	0.000
17	0.764	0.011	-0.813	0.013	0.000	0.000
18	0.910	0.012	-0.025	0.009	0.000	0.000
19	0.829	0.012	0.747	0.012	0.000	0.000
20	0.439	0.017	0.310	0.066	0.033	0.021
21	0.647	0.010	-1.134	0.017	0.000	0.000
22	0.714	0.011	-1.276	0.017	0.000	0.000
23	0.605	0.016	0.428	0.026	0.022	0.010
24	0.800	0.011	-0.649	0.012	0.000	0.000
25	1.043	0.013	0.148	0.008	0.000	0.000
26	0.755	0.019	0.409	0.022	0.081	0.008
27	0.865	0.013	1.027	0.014	0.000	0.000
28	0.974	0.013	0.492	0.010	0.000	0.000
29	0.495	0.016	-0.937	0.089	0.000	0.033
30	0.701	0.011	0.984	0.016	0.000	0.000
31	0.581	0.018	0.555	0.033	0.074	0.012
32	0.171	0.035	3.178	0.339	0.000	0.075
33	0.619	0.017	0.683	0.024	0.034	0.008
34	0.726	0.025	1.698	0.028	0.070	0.005
35	0.699	0.010	-0.765	0.014	0.000	0.000
36	0.648	0.017	-1.629	0.077	0.000	0.038
37	0.681	0.026	1.450	0.028	0.135	0.007
38	0.891	0.020	0.430	0.018	0.101	0.007
39	0.766	0.011	-1.351	0.017	0.000	0.000
40	0.740	0.010	-0.236	0.011	0.000	0.000
41	0.756	0.010	-0.606	0.012	0.000	0.000
42	0.600	0.010	1.374	0.023	0.000	0.000

Class-6 Maths

ITEM	SLOPE	S.E.	LOCATION	S.E.	GUESSING	S.E.
1	0.792	0.010	-0.313	0.010	0.000	0.000
2	0.621	0.010	-1.455	0.021	0.000	0.000
3	0.723	0.018	-0.386	0.039	0.135	0.016
4	0.827	0.010	-0.279	0.009	0.000	0.000
5	0.632	0.024	1.353	0.028	0.168	0.009
6	0.703	0.009	-0.765	0.013	0.000	0.000
7	0.841	0.010	-0.202	0.009	0.000	0.000
8	0.502	0.017	-0.188	0.068	0.057	0.023
9	0.671	0.011	-1.957	0.026	0.000	0.000
10	0.758	0.009	-0.182	0.010	0.000	0.000
11	0.950	0.011	-0.573	0.009	0.000	0.000
12	0.746	0.009	-0.139	0.010	0.000	0.000
13	0.827	0.010	-0.772	0.011	0.000	0.000
14	0.973	0.011	0.474	0.008	0.000	0.000
15	0.529	0.004	0.507	0.008	0.000	0.000
16	0.284	0.002	0.039	0.009	0.000	0.000
17	0.778	0.010	-0.911	0.012	0.000	0.000
18	0.666	0.016	0.138	0.029	0.052	0.011
19	0.806	0.024	1.441	0.020	0.093	0.005
20	1.092	0.020	0.108	0.014	0.104	0.007
21	0.713	0.010	1.306	0.017	0.000	0.000
22	1.221	0.013	-0.123	0.007	0.000	0.000
23	0.725	0.017	0.861	0.018	0.046	0.006
24	0.812	0.010	0.072	0.009	0.000	0.000
25	0.523	0.020	0.935	0.040	0.124	0.013
26	0.422	0.004	1.189	0.013	0.000	0.000
27	0.903	0.011	-0.027	0.008	0.000	0.000
28	0.898	0.011	0.288	0.009	0.000	0.000
29	0.926	0.011	-0.822	0.010	0.000	0.000
30	0.926	0.019	-0.079	0.021	0.140	0.010
31	1.178	0.014	0.758	0.008	0.000	0.000
32	0.790	0.016	0.473	0.016	0.038	0.007
33	0.382	0.027	2.232	0.058	0.104	0.015
34	1.007	0.012	0.376	0.008	0.000	0.000
35	1.016	0.012	0.789	0.009	0.000	0.000
36	0.424	0.003	0.553	0.009	0.000	0.000
37	0.968	0.012	0.993	0.011	0.000	0.000
38	0.929	0.011	-0.001	0.008	0.000	0.000
39	1.008	0.031	1.415	0.018	0.168	0.004
40	0.314	0.004	1.627	0.022	0.000	0.000
41	1.268	0.031	1.149	0.012	0.140	0.004
42	1.150	0.030	1.489	0.015	0.095	0.003
43	0.988	0.023	1.073	0.014	0.103	0.004
44	0.177	0.001	0.723	0.012	0.000	0.000
45	0.650	0.014	0.073	0.026	0.003	0.010
46	0.878	0.048	2.556	0.054	0.124	0.003
47	0.823	0.030	2.107	0.032	0.066	0.003

Class-8 Maths

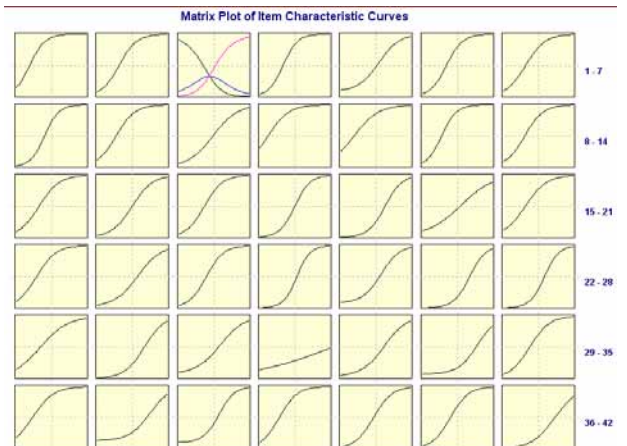
Item	SLOPE	S.E.	LOCATION	S.E.	GUESSING	S.E.
1	0.353	0.011	-2.966	0.065	0.000	0.000
2	0.444	0.023	0.000	4.176	0.000	4.190
3	0.688	0.037	1.821	0.027	0.231	0.007
4	0.815	0.038	2.063	0.032	0.210	0.006
5	0.473	0.011	-1.909	0.035	0.000	0.000
6	0.650	0.028	1.383	0.021	0.084	0.007
7	0.178	0.001	-0.889	0.018	0.000	0.000
8	0.575	0.014	2.639	0.038	0.000	0.000
9	0.258	0.022	-0.220	0.111	0.000	0.035
10	0.512	0.024	-0.070	0.053	0.110	0.020
11	0.993	0.070	2.772	0.054	0.165	0.003
12	0.567	0.014	2.568	0.035	0.000	0.000
13	0.448	0.012	1.940	0.025	0.000	0.000
14	0.688	0.015	2.182	0.026	0.000	0.000
15	0.741	0.031	0.600	0.023	0.170	0.009
16	1.147	0.082	2.766	0.038	0.173	0.003
17	0.842	0.033	1.725	0.022	0.139	0.006
18	1.159	0.051	2.229	0.026	0.101	0.003
19	0.529	0.033	1.388	0.031	0.248	0.010
20	0.370	0.025	0.848	0.049	0.057	0.017
21	0.545	0.043	3.795	0.464	0.896	0.027
22	0.883	0.055	2.573	0.042	0.174	0.004
23	0.461	0.026	0.931	0.037	0.133	0.013
24	0.634	0.012	1.101	0.016	0.000	0.000
25	0.745	0.014	0.117	0.012	0.000	0.000
26	0.617	0.028	1.162	0.024	0.113	0.008
27	0.674	0.035	2.069	0.029	0.145	0.006
28	0.755	0.015	2.181	0.026	0.000	0.000
29	0.366	0.038	2.681	0.068	0.194	0.018
30	0.563	0.013	1.195	0.017	0.000	0.000
31	0.586	0.016	3.040	0.051	0.000	0.000
32	0.672	0.016	2.505	0.035	0.000	0.000
33	0.532	0.064	3.822	0.135	0.128	0.006
34	0.584	0.012	-1.086	0.020	0.000	0.000
35	1.267	0.060	2.015	0.022	0.167	0.003
36	0.891	0.035	1.197	0.020	0.192	0.007
37	0.765	0.016	1.692	0.019	0.000	0.000
38	0.827	0.019	2.512	0.029	0.000	0.000
39	0.564	0.030	1.590	0.029	0.136	0.010
40	0.568	0.012	1.939	0.025	0.000	0.000
41	0.998	0.077	2.807	0.045	0.206	0.003
42	0.700	0.051	2.764	0.056	0.181	0.005
43	0.596	0.072	3.252	0.156	0.267	0.008
44	1.197	0.032	1.411	0.013	0.065	0.001
45	1.782	0.118	2.535	0.042	0.220	0.003
46	1.325	0.118	2.812	0.068	0.272	0.003
47	0.294	0.009	2.450	0.051	0.000	0.000
48	1.578	0.073	2.399	0.027	0.114	0.002
49	0.503	0.038	2.655	0.055	0.170	0.010
50	0.413	0.023	-0.261	0.074	0.016	0.026
51	0.892	0.111	3.306	0.084	0.194	0.003
52	0.547	0.038	2.281	0.040	0.210	0.00

Appendix H - Matrix Plot for All Papers

Class 4 Language



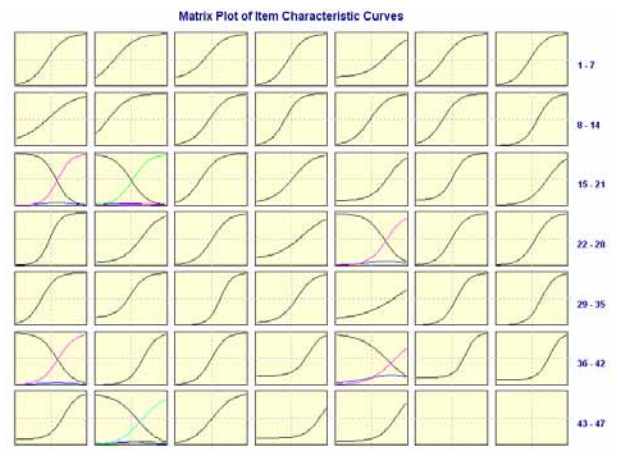
Class 4 Maths



Class 6 Language



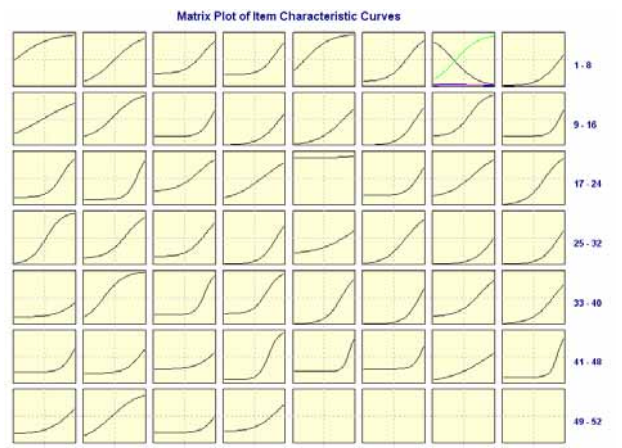
Class 6 Maths



Class 8 Language



Class 8 Maths



Appendix I: Supporting Information from Analysis of Background Factors

DETAILED DESCRIPTION OF VARIABLES

At the school level, the data provided information on infrastructure, learning resources, learning time per year, mid-day meals and type of school. Infrastructure for this report is measured by an additive scale of eleven binary variables referred to presence or absence of adequacy infrastructure such as 'pucca' building, compound wall, offices, toilets, almirahs, water supply, electricity among others. Learning resources comprised questions on presence or lack of labs, library, books, computers, radio, tv, charts, maps, blackboards and chalks. Some questions were referred if equipment was in optimal conditions or if there was enough number of learning material. The two scales - infrastructure and learning resources - were transformed in relative numbers ranging from 0 to 100. Mid-day meal was a dichotomous variable where 1 = there are mid-day meals, 0 = there are not mid-day meals). Type of school included 1 = Boy school, 2 = Girl school and 3 = Coeducational school. Also type of school collected information 1 = monograde and 2 = multigrade. Finally, the number of academic hours per year was computed for each school based on information provided at state level.

At the head-teacher level, the data collected information on teacher gender (where female = 0 and male = 1), age, and a host of teacher background variables including, rank designation (where 1 = permanent and 2 = contract), experience as teacher and head-teacher in years, academic qualification (categorical variable with values 1 = no degree, 2 = bachelor's degree and 3 = master's degree), teacher training (categorical variable with values 1 = no teacher training, 2 = a bachelor in education, 3 = diploma in education, 4 = a master in education), in-service training in the last year (categorical variable where 0 = no training, 1 = training in the last year).

At the teacher level, the data provided information on teacher gender (where female teacher = 0 and male teacher = 1), age, and a host of teacher background variables including, rank designation (where 1 = permanent and 2 = contract), teacher experience in years, academic qualification (categorical variable with values 1 = no degree, 2 = bachelor's degree and 3 = master's degree), teacher training (categorical variable with values 1 = no teacher training, 2 = a bachelor in education, 3 = diploma in education, 4 = a master in education), in-service training in the last year (categorical variable where 0 = no training, 1 = training in the last year). In addition, the study also asked the teachers their opinion on a host of questions that revealed their opinion on discipline. Here we focussed on six questions, which were all coded as binary variables with response of yes coded as '1' and the response of no coded as '0'. Examples of questions are, "Do you think strict discipline is necessary for proper teaching", "Do you think there can be no discipline without fear of the teacher in students", "Do you think the teacher loses respects if she/he plays and cracks jokes with the students". In order to accord greater weight to perception about discipline in the final analysis, an index of 'discipline' was constructed with a summation of the teachers' attitudes on the six questions. Teachers could receive scores ranging from 0 to 6. Although reported in the appendix, para-teacher variable was excluded of analysis due to inconsistencies in data.

At the student level, separate analyses were conducted for student scores in mathematics and language. Information was also available on student gender (where female student = 0 and male student = 1), age, tuitions (1 = No tuitions, 2 = Maths only, 3 = English only, 4 = Maths and English) and a measure of socioeconomic status. This measure was created by summing the students' responses on three questions about the availability of certain facilities at home. The questions asked students about the type of vehicle at home (cycle, scooter, none, or both), cooking method used at home (firewood, kerosene, or cooking gas), and ownership of radio and television (radio, tv, both or nothing). A student who had access to none of the facilities listed would receive the minimum score of zero; one who had access to all of them would receive the maximum score of eight. The scale was transformed in relative numbers ranging from 0 to 100.

Student perception and habits included student's perception of school (1 = boring and not useful, 2 = fun but not useful, 3 = fun and useful for finding a job, 4 = fun and useful for learning), student's perception their own performance (1 = not good at studies, 2 = above average, 3 = the top 10, 4 = the top 5), student's liking for the subject (1 = I do not like any subject, 2 = English, 3 = Maths, 4 = Another subject), students' reading habits (1 = do not read at all, 2 = less than 30 minutes, 3 = 30 minutes to 1 hour, 4 = more than 1 hour) and student's use the library school (1 = school without library, 2 = school does not give books, 3 = student does not take books, 4 = student take books).

Table I.1: Language and Math Scores in Class 4, 6 and 8 based on School Characteristics (Infrastructure and Learning Resources)

School has...	Language		Math	
	No	Yes	No	Yes
... a 'pucca' building ⁺⁺⁺	51.8	51.5	45.4	44.1
... a proper compound wall ^{***}	50.3	52.1	44.3	44.1
... a staff room for your teachers	49.5	52.9	44.7	43.8
... an office room for the head master and for school records ^{****++}	48.8	52.2	43.2	44.5
... separate classrooms ^{***}	48.8	52.5	44.2	44.0
... almirahs and cupboards to keep records and other materials ^{****++}	49.3	51.7	43.1	44.2
... drinking water facility ^{***}	49.0	51.9	44.0	44.2
... toilets that are functional in condition for students ^{****++}	46.5	52.5	40.7	44.9
... separate toilets for girls ^{****++}	47.7	53.0	41.8	45.2
... electricity connection in functional condition ^{****++}	45.7	53.6	41.5	45.1
... other source of electricity ^{****++}	51.1	51.8	44.1	43.6
... mid-day meals provided to the students ^{****++}	49.1	51.8	39.4	44.8
Infrastructure	r=.135^{***}		r=.040^{**}	
... a science laboratory ^{****++}	49.7	54.2	44.7	43.2
... laboratory being used by teachers and students ^{****++}	49.4	54.3	44.4	43.2
... library ^{****++}	47.8	53.2	41.7	45.3
... books ^{****++}	43.7	52.3	39.6	44.4
... books available for students when they want to read ^{****++}	46.2	53.0	41.0	45.0
... computers in functional condition ^{****++}	47.2	55.0	43.0	44.1
... computers available for children ^{****++}	47.3	55.4	42.7	44.4
... a television ^{****++}	51.0	52.2	42.3	46.4
... a television in functional condition ^{****++}	50.5	52.7	42.3	46.7
... a radio ^{****++}	49.1	55.0	42.4	46.8
... a radio in functional condition ^{****++}	49.3	55.2	42.7	46.0
... charts and maps available in the school ^{****++}	48.6	51.7	42.1	44.3
... a blackboard in every classroom ^{****++}	44.3	51.8	39.2	44.4
... enough 'chalk pieces' provided in all classrooms ^{****++}	45.9	51.7	42.0	44.2
Material and equipment	r=.225^{***}		r=.089^{***}	

Note:

- For Language: *** = $p \leq .001$, ** = $p \leq .005$, * = $p \leq .05$,
- For Math⁺⁺⁺ = $p \leq .001$, ⁺⁺ = $p \leq .005$, ⁺ = $p \leq .05$

Table I.2: Language and Math Scores in Class 4, 6 and 8 based on Student Background

Age	LANGUAGE			MATH		
	AVG	N	SD	AVG	N	SD
8 years old	47.1	2524	23.2	45.9	2524	22.2
9 years old	55.6	7863	21.7	54.0	7863	21.0
10 years old	54.7	11498	22.3	54.7	11498	22.4
11 years old	53.0	13753	21.6	50.0	13753	22.4
12 years old	52.7	17299	21.3	47.1	17299	21.6
13 years old	53.9	17469	19.5	40.9	17469	18.9
14 years old	54.1	14544	19.7	38.3	14544	17.1
15 years old	48.8	7518	19.4	34.9	7518	16.1
Vehicles at Home	AVG	N	SD	AVG	N	SD
Don't have any vehicles	54.3	17048	21.4	46.3	17048	21.8
Cycle	52.7	49182	20.5	45.3	49182	21.2
Scooter	50.5	11544	21.6	44.3	11544	21.6
Cycle and scooter	55.6	15540	20.4	44.8	15540	20.4
Firewood, Kerosene Stove, Cooking Gas	AVG	N	SD	AVG	N	SD
Firewood	52.0	50439	20.4	44.7	50439	21.1
Kerosene stove	50.5	12393	21.3	44.5	12393	21.8
Cooking gas	56.7	28942	20.7	46.9	28942	21.1
Occupation of Parents	AVG	N	SD	AVG	N	SD
Farmers	51.1	46494	19.9	43.8	46494	21.0
Gov. Servants	52.0	11302	21.9	45.0	11302	21.8
Business	54.6	11198	21.2	46.6	11198	21.6
Army	49.8	4062	21.8	43.6	4062	22.1
Other	59.9	19220	20.1	49.2	19220	20.6
Student Belief on the School	AVG	N	SD	AVG	N	SD
Boring and not useful	40.6	4908	20.7	38.3	4908	20.9
Fun but not useful	43.4	9624	20.6	40.3	9624	21.2
Fun and useful for getting job	54.9	40207	19.8	46.2	40207	20.8
Fun and useful to know	56.4	36424	20.3	47.2	36424	21.4
Daily Time Spent on Reading Material other than Textbooks	AVG	N	SD	AVG	N	SD
Don't read	49.1	8640	22.2	43.8	8640	21.5
Less than 30 min	54.2	23472	20.9	45.3	23472	21.1
30- 60 min	54.1	24365	21.0	46.6	24365	21.5
More than 60 min	53.4	35739	20.0	45.3	35739	21.1
Most Liked Subject	AVG	N	SD	AVG	N	SD
Don't like any subject	42.8	3273	21.6	38.9	3273	21.3
English	53.8	34406	20.7	44.6	34406	21.2
Maths	53.3	39987	20.6	47.4	39987	21.3
Other	54.2	14733	20.9	43.1	14733	20.7
Tuition Subjects	AVG	N	SD	AVG	N	SD
No tuitions	56.4	28163	20.4	46.8	28163	21.3
Maths	49.3	16179	20.5	42.4	16179	20.5
English	49.1	13337	20.6	43.1	13337	21.2
Maths and English	54.3	34190	20.6	46.3	34190	21.4
Using School Library	AVG	N	SD	AVG	N	SD
Schools without library	53.4	18064	21.4	44.8	18064	21.1
School w/library doesn't give books	46.6	8445	21.4	40.5	8445	20.6
Don't use library	50.2	9170	21.5	43.3	9170	21.2
Use library	55.2	55946	19.9	47.0	55946	21.2

Self Opinion about Performance in School	AVG	N	SD	AVG	N	SD
Not good at studies	42.5	5799	21.0	39.2	5799	21.0
Above average	53.3	25036	20.2	45.8	25036	21.2
Among the top 10	53.2	19513	20.8	44.9	19513	21.2
The top 5	55.9	40019	20.2	47.2	40019	21.1

Table I.3: Language and Math Scores in Class 4, 6 and 8 based on Head-teacher Background

	LANGUAGE			MATH		
	AVG	N	SD	AVG	N	SD
20- 30 years	47.2	1557	23.0	43.3	1557	22.5
31-40 years	50.6	12167	21.7	44.0	12167	22.0
41-50 years	51.4	33780	21.4	44.3	33780	22.0
51-60 years	52.1	43049	21.8	44.1	43049	21.8
61 - more	48.0	846	19.8	36.5	846	18.1
Gender	AVG	N	SD	AVG	N	SD
Male	49.8	62927	21.6	42.8	62927	21.7
Female	55.3	29536	21.2	47.2	29536	22.1
Highest Degree	AVG	N	SD	AVG	N	SD
No degree	55.6	6561	21.8	53.9	6561	23.6
Bachelor	50.8	34333	22.3	43.7	34333	22.3
Master	50.2	36853	21.4	40.4	36853	20.0
Any other	54.5	4242	19.7	51.2	4242	21.5
Highest Teacher Training Degree	AVG	N	SD	AVG	N	SD
No teacher training	46.9	1845	23.1	43.4	1845	23.3
Bachelor in education	51.0	44520	21.3	42.1	44520	20.7
Diploma in education	49.9	16021	22.8	44.8	16021	24.0
Master in education	49.5	10900	22.5	40.6	10900	20.6
Any other	54.2	6132	20.3	50.2	6132	23.1
In-service training in last 12 months	AVG	N	SD	AVG	N	SD
No	51.0	32204	22.1	44.0	32204	21.9
Yes	51.8	58338	21.4	44.1	58338	22.0
Years of Teaching Experience Before Becoming HM	AVG	N	SD	AVG	N	SD
Less than 1 year	50.0	1783	22.2	40.9	1783	21.0
1-10 years	50.1	18144	21.6	42.0	18144	21.0
11-20 years	49.8	30212	21.7	43.6	30212	22.1
21 and more	53.6	40304	21.5	45.7	40304	22.2
Total Years of Experience as HM	AVG	N	SD	AVG	N	SD
Less than 1 year	51.3	6412	20.4	43.2	6412	20.3
1-10 years	52.4	64849	21.6	45.3	64849	22.3
11-20 years	47.4	11678	21.8	38.7	11678	19.8
21 and more	50.7	5286	22.2	41.4	5286	22.2
Years of Experience as HM of the School	AVG	N	SD	AVG	N	SD
Less than 1 year	52.2	8778	21.0	44.1	8778	20.8
1-10 years	51.6	72131	21.8	44.5	72131	22.1
11-20 years	48.8	4275	21.9	39.8	4275	21.6
21 and more	54.9	1500	20.4	46.6	1500	22.6
Position at the Start of Career	AVG	N	SD	AVG	N	SD
Permanent teacher	51.6	84794	21.6	44.1	84794	22.0
Contract	50.1	7655	22.5	44.1	7655	22.1
If contract, Kind of contract at the Start of Career	AVG	N	SD	AVG	N	SD
Contract	50.8	8002	22.9	43.7	8002	22.8
Parateacher/helper	52.7	10310	21.5	46.8	10310	23.6

Table I.4: Language and Math Scores in Class 4, 6 and 8 based on Teacher Background

Gender	AVG	N	SD
Male	48.7	27606	21.7
Female	53.3	21180	21.4
Permanent/ On Contract	AVG	N	SD
Contract	45.9	5363	22.9
Permanent	51.2	42967	21.4
Para-teacher	AVG	N	SD
No	48.6	14934	23.4
Yes	50.7	4243	21.4
Highest Degree	AVG	N	SD
No degree	52.3	4913	22.5
Bachelor	49.4	19591	22.1
Master	50.2	16554	21.2
Any other	55.6	2916	20.6
Highest Teacher Training Degree	AVG	N	SD
No teacher training	45.2	1823	23.3
Bachelor in Education	49.2	22025	21.7
Diploma in Education	50.2	10894	22.4
Master in Education	49.0	2711	21.2
Any other	56.2	4212	19.8
In-service training in last 12 months	AVG	N	SD
No	49.6	14275	22.6
Yes	51.0	33321	21.2
Total teaching Experience	AVG	N	SD
Less than 1 year	51.6	951	22.9
1-10 years	49.7	20587	22.0
11-20 years	52.8	15057	21.3
21 and more	49.6	11216	21.1
Handling Multigrade Classroom	AVG	N	SD
No	51.0	26000	21.0
Yes	50.8	21101	22.4
Teacher Reads Aloud from Textbook to the Listening Class	AVG	N	SD
No	46.6	6487	23.1
Yes	51.4	41212	21.3
Students Read Aloud and Teacher Explains	AVG	N	SD
No	49.7	12572	21.9
Yes	51.0	35240	21.6
Teacher Reads Aloud and Teacher Explains	AVG	N	SD
No	48.8	4394	23.5
Yes	51.0	43381	21.4
Teacher Asks Questions Related to the Topic	AVG	N	SD
No	47.7	1728	20.0
Yes	50.9	46546	21.7
Teacher Explains Maths Problems	AVG	N	SD
No	48.4	16736	20.3
Yes	51.6	26393	22.8
Teacher Belief -Need of Strict Discipline for Proper Teaching	AVG	N	SD
No	51.7	12998	21.2
Yes	50.4	35167	21.9
Teacher Belief - Control Over Students to Maintain Discipline	AVG	N	SD
No	50.7	9195	21.2

Yes	50.7	38735	21.8
Teacher Belief - Importance of Fear in Maintaining Discipline	AVG	N	SD
No	51.0	23618	21.4
Yes	50.5	24297	22.0
Teacher Belief - On Cracking Jokes with Students	AVG	N	SD
No	51.0	32911	21.6
Yes	49.9	15166	21.8
Teacher Belief - Physical Punishment in Improving Attention	AVG	N	SD
No	50.7	37568	21.7
Yes	50.7	10658	21.6
Teacher Belief - Physical Punishment for Undisciplined Students	AVG	N	SD
No	51.6	33420	21.0
Yes	48.9	14788	23.0
Teacher Belief - Capability of All Students to Learn	AVG	N	SD
No	49.7	14845	21.8
Yes	51.1	32947	21.5
Teacher Belief - Learning Abilities of Girls and Boys are Same	AVG	N	SD
No	49.1	20269	22.1
Yes	52.0	26811	21.3
Teacher Belief - Ability of Girls and Boys in Language	AVG	N	SD
No	49.5	19092	21.6
Yes	51.6	27251	21.7
Teacher Belief - Ability of Girls and Boys in Maths	AVG	N	SD
No	48.7	26400	22.1
Yes	53.8	11770	21.6
Teacher Belief - Ability of Children to Learn at Same Speed	N	SD	SD
No	51.3	36179	21.5
Yes	49.1	11685	22.2

Appendix J – State Wise - Oral Test Overall Performance

S.No	State	Overall			Girls			Boys		
		N	AVG	SD	N	AVG	SD	N	AVG	SD
1	National	8961	63.8	29.8	4492	64.6	29.7	4469	63.1	29.8
2	Andhra Pradesh	812	60.1	26.3	423	61.6	26.1	389	58.4	26.4
3	Assam	212	52.9	30.1	114	51.0	30.3	98	55.0	29.7
4	Bihar	604	63.4	29.2	290	59.9	30.1	314	66.6	28.0
5	Chandigarh *	186	69.3	26.2	99	73.8	24.4	87	64.2	27.2
6	Chhattisgarh	282	65.7	29.3	152	65.1	29.6	130	66.3	29.1
7	Delhi	192	85.4	21.0	115	82.8	21.1	77	89.2	20.3
8	Gujarat	381	53.3	25.4	200	53.3	26.1	181	53.2	24.7
9	Haryana	323	61.3	28.3	156	63.5	26.9	167	59.3	29.3
10	Jammu and Kashmir	292	17.5	17.5	136	20.5	18.6	156	14.8	16.0
11	Jharkhand	252	55.4	30.3	117	56.5	30.3	135	54.5	30.2
12	Karnataka	449	64.2	21.3	219	63.3	21.6	230	65.0	21.0
13	Kerala	316	76.9	25.2	150	81.2	21.8	166	73.1	27.3
14	Madhya Pradesh	735	50.8	32.9	327	48.3	33.1	408	52.7	32.6
15	Maharashtra	1022	76.2	23.9	504	77.9	23.3	518	74.5	24.2
16	Orissa	182	79.6	27.1	94	78.7	28.4	88	80.5	25.6
17	Punjab	354	77.0	23.5	185	78.9	22.0	169	75.0	24.8
18	Rajasthan	903	53.4	31.5	459	51.0	32.3	444	55.9	30.3
19	Tamil Nadu	872	77.8	24.2	440	80.7	22.2	432	74.8	25.7
20	Uttarakhand	592	68.5	23.5	312	70.5	21.2	280	66.2	25.6

N - Sample Size, AVG - Average, SD - Standard Deviation

S. No	State	Overall	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1	National	63.8	83.8	72.7	66.0	70.1	58.5	51.9	57.9	49.4
2	Andhra Pradesh	60.1	83.4	71.2	55.6	63.6	54.0	46.2	54.1	52.3
3	Assam	52.9	74.5	51.2	42.9	65.8	37.1	41.3	50.0	59.9
4	Bihar	63.4	84.4	70.8	66.1	71.7	59.4	55.1	54.5	45.2
5	Chandigarh *	69.3	88.3	72.3	66.8	78.5	55.1	56.3	69.9	67.2
6	Chhattisgarh	65.7	86.3	77.2	68.1	73.4	60.6	54.2	56.0	49.3
7	Delhi	85.4	97.1	92.1	90.1	92.2	83.7	80.9	76.6	70.3
8	Gujarat	53.3	87.1	51.2	52.5	79.5	50.0	40.3	42.8	22.6
9	Haryana	61.3	85.5	66.0	59.4	73.2	51.6	45.9	58.2	50.5
10	Jammu and Kashmir	17.5	34.0	24.7	11.5	32.5	14.6	7.4	9.2	5.5
11	Jharkhand	55.4	77.9	61.6	54.1	56.3	52.3	45.5	47.6	48.0
12	Karnataka	64.2	88.3	78.6	68.8	71.6	52.6	44.7	67.3	41.6
13	Kerala	76.9	95.1	91.7	84.6	80.9	80.4	67.4	62.0	53.2
14	Madhya Pradesh	50.8	73.2	65.6	53.0	55.9	45.1	37.2	41.9	34.0
15	Maharashtra	76.2	92.4	88.1	83.4	80.3	72.4	68.2	67.9	56.7
16	Orissa	79.6	92.2	88.3	82.6	84.6	77.1	69.1	76.9	65.9
17	Punjab	77.0	94.2	83.3	77.4	78.6	72.4	62.9	79.1	68.4
18	Rajasthan	53.4	78.0	64.5	58.9	58.5	47.7	40.7	43.7	35.0
19	Tamil Nadu	77.8	87.5	80.7	80.8	80.1	73.3	65.0	81.7	73.3
20	Uttarakhand	68.5	88.1	79.2	75.1	71.4	63.3	56.9	59.6	54.1