

STATE OF PRIMARY EDUCATION AND EDUCATIONAL DISPARITY IN DELHI

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1. Introduction

Education is important not only for the full development of one's personality, but also for the sustained growth of the nation. India has made large strides in educating its population of more than a billion people, yet a lot remains to be done. It is commonplace now that education is both intrinsically valuable and also instrumental for economic well-being, and this is true for individuals and entire nations. No country in the world has been able to develop without the spread of mass education. An educated population is a prerequisite for take-off into high economic growth.

Primary education in India, therefore, is the foundation on which the development of every citizen and the nation as a whole hinges. But making primary education available for all in India has also been one of the major challenges for the government. Moreover, the quality of elementary education in India has also been a major cause of worry for the government.

Primary education refers to the education of children between the ages 6-11 years (grades 1-5). Universalization of Primary Education (UPE) is a constitutional provision in India and there has been a steady expansion in the spread of primary education since Indian independence in 1947. The Indian educational system is the second largest in the world after China. In fact, making Primary education in India accessible, universal and relevant has been a goal since the eighth five-year plan.

2. Objective of the study

An attempt is made in this paper to analyze the state of primary education in Delhi. The specific objectives are as follows:

1. To find out the status of Primary education across the districts of Delhi on the basis of DISE data.
2. To develop index for broad indicators like infrastructure, teachers, and outcome and then to make a composite index (Education index) taking into account all the separate indexes.

3. Literature Review

Since independence there has been a remarkable expansion of educational opportunities at almost all stages and avenues of specialization and for various segments of population [Kamat 1989; Tilak 2004] and yet access remains far from equal even in terms of universalisation of elementary education [Singh 2005; Tilak 2006] in the post-independence period.

Education is considered to be an important mechanism for development in India, especially for the scheduled castes and scheduled tribes. Since these sections of our society were traditionally and historically deprived of their basic rights, education was far away from their reach.

Empirical literature is abundant to show that investment in education contributes to increased labor productivity, higher individual earnings, and higher levels of national economic growth. Equally strong evidence is also available to show that investment in education contributes to reduction in poverty and improvement in income distribution, besides to social, demographic, and political development.' It is universally found that of the different layers of education, investment in primary education carries higher returns and higher education the least. This is true in the case of India as well (Tilak 1987).

The effects of education on poverty and income distribution are also found to be of similar nature. The objective of education is human resource development, which in turn leads to overall national development. The benefits of schooling are unquestionable. According to the human capital theory, labour productivity is a direct function of the amount of schooling received.

Higher schooling is expected to increase cognitive development and leads to economic modernization [Colclough 1982].

The individual and social returns from women's education are believed to be exceptionally high especially where the lowering of fertility and infant and child mortality rate are concerned [Kingdon 1999; World Bank 1997]. In addition rising levels of education of women leads to improvements in nutrition and health care facilities and the improvement of children's educational achievements [Sengupta and Guha 2002; Colclough 1982].

4. Database

The data used in this exercise is the District Information System on Education (DISE) data managed by National University of Educational Planning and Administration (NUEPA), New Delhi for the year 2009-10.

5. Research Methodology

An attempt has been made in this paper to make an inquiry into the disparity in the educational development at the district level. For serving this purpose the Education Index has been computed.

To develop educational index at district level, following three broad indicators with subdivision have been considered for the study.

1) Infrastructure

Average Student-Classroom Ratio (SCR)

Schools with SCR ≥ 60

Percentage of Schools without Drinking Water Facility

Percentage of Schools with common Toilet

Percentage of Schools with Girls' Toilet

2) **Teachers**

Percentage of Female Teachers

Average Pupil-Teacher Ratio

Percentage of Schools with Pupil-Teacher Ratio > 60

Percentage of Schools with three or less Teachers

Percentage of Teachers without Professional Qualifications

3) **Outcomes**

Gross Enrolment Ratio (GER) – Overall

Percentage Scheduled Castes enrolled

Percentage Scheduled Tribes enrolled

Gender Parity Index in Enrolment

Repetition Rate

Dropout Rate

Percentage of enrolled Boys Passed

Percentage of enrolled Girls Passed

Percentage of Boys Passed with >=60 per cent marks

Percentage of Girls Passed with >=60 per cent marks

The Principal Component Analysis method is used for developing the education index at the district levels. The formulae used in preparing the Index is as follows: Before making the Index, we have to undergo a lot of exercises. The very first exercise is to normalize or standardize the whole distribution. In order to normalize the distribution the following formulae is used.

Normalization Method

$$NV_{ij} = 1 - \left(\frac{\{Best\ X_i - Observed\ X_{ij}\}}{\{Best\ X_i - Worst\ X_i\}} \right)$$

Formulae used to compute weights:

$$Weights = \sum_{ij=1}^n F_{ij} / E_j$$

Where F_{ij} is the factor loading, Value of the i th variable in the j th factor and

E_j is the eigen value of the j th factor

Once we have got the weights of the distribution, the normalized values are multiplied with the weights. These derived values are then divided by the double summation of the factor loadings and the eigen values. The formulae used for doing this are given below. Secondly, in order to remove the negative values, if any, we take the mode of the factor loadings as has been shown in the formulae.

$$I = \frac{\sum_{i=1}^n V_i \left[\sum_{j=1}^n |F_{ij}| \cdot E_j \right]}{\sum_{i=1}^n \left[\sum_{j=1}^n |F_{ij}| \cdot E_j \right]}$$

Where I is the Index value, V_i is the indicator, F_{ij} is the factor loading value of the i th variable on the j th factor and E_j is the eigen value of the j th factor.

6. Descriptive analysis

6.1 Levels of Literacy

In 2001, the literacy rate for India as a whole was 65.38% for population aged 7 and above. At an all-India level, the literacy rate for males and females is 75.8% and 54.2% respectively (data for 2001). Also, gap in Male-Female literacy rates came down from 21.70% (in 2001) to 13.78% (in 2011). If we compare Delhi to this, it fares decently with a literacy rate of 75.87% and the male and female literacy rates of 80% and 71% respectively. The gap between male and female literacy

rates also has come down from 12.4% (in 2001) to 9% (in 2011). This happened due to steep fall in the male literacy rate. During this decade (2001-2011), male and female literacy rates in Delhi have fallen by 7.35% and 4% respectively. The overall level of literacy has also gone down.

Table 1: Literacy Rates in India (2001-2011)

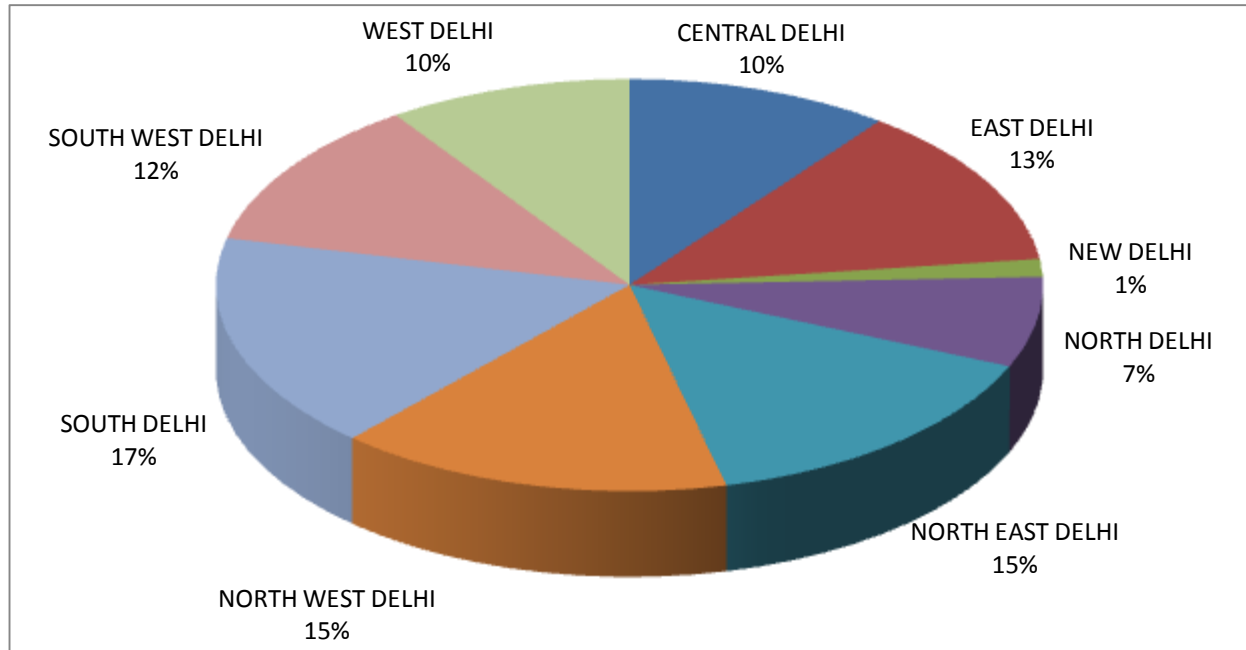
	2001			2011		
	Persons	Male	Female	Persons	Male	Female
INDIA	65.2	75.6	54	63.06	69.75	55.97
Delhi	81.8	87.4	75	75.87	80.05	71.05

Source: Census of India 2001 & 2011

6.2 Status of Primary Education in Delhi

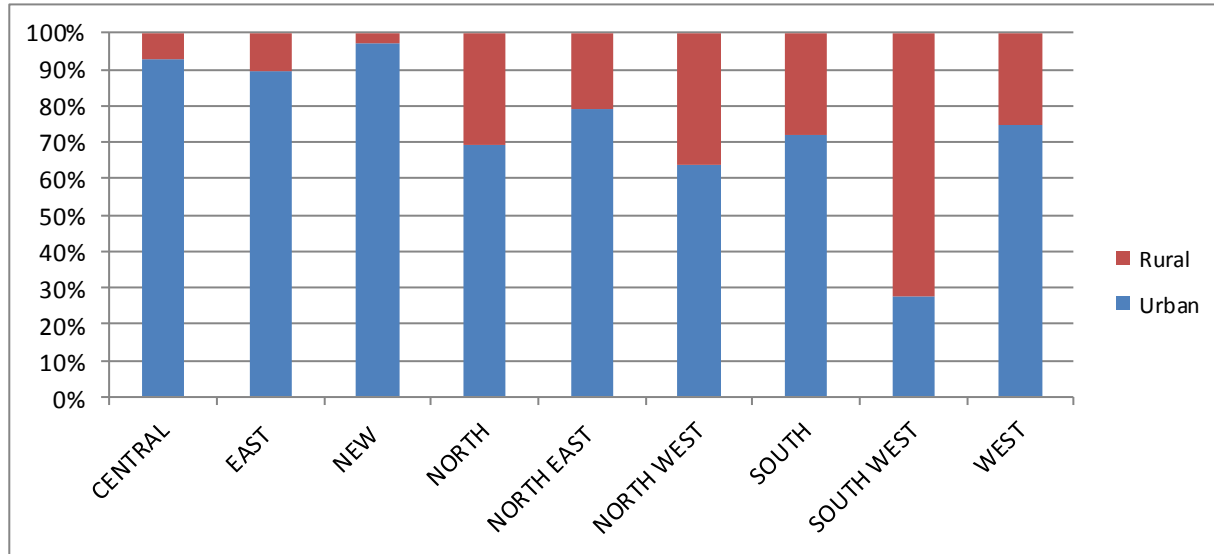
The total number of primary schools reported in 2009-10 was 2580. South Delhi district reported maximum number of primary schools i.e. 438 which accounted for 17% of total primary schools. New Delhi on the other hand reported only 36 primary schools against the district average of 286 primary schools.

Figure 1: Distribution of Primary Schools across Districts of Delhi



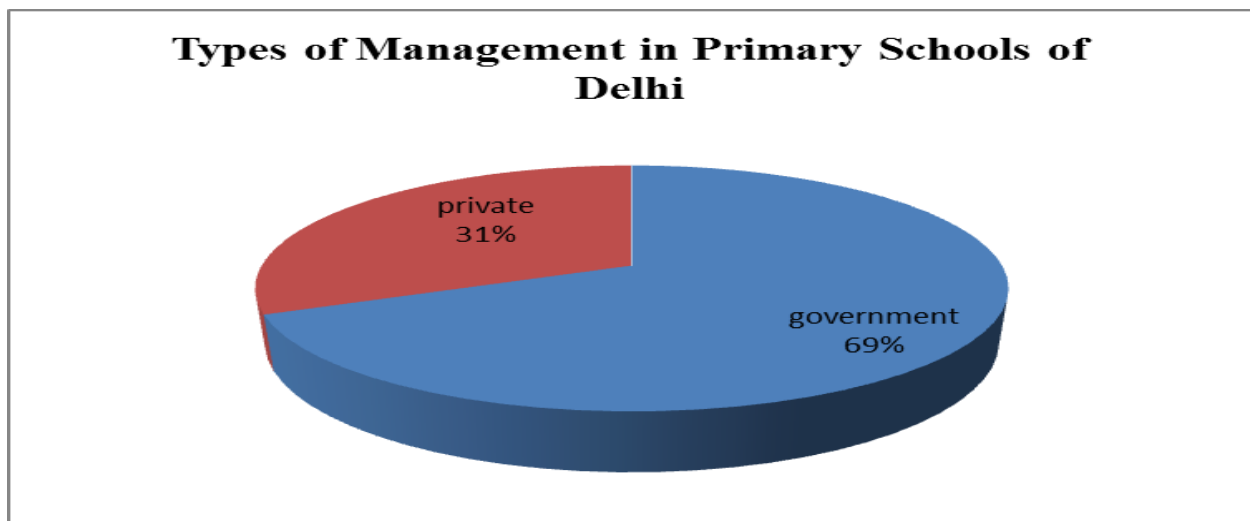
As Delhi is highly urbanized so the maximum number of schools should be reported in urban areas. But it came out that the proportion of primary schools is equally fair in rural areas. And in case of south west district number of schools in rural areas was higher than that in urban areas. Whereas in other districts the number of schools reported was much lesser in rural areas.

Figure 2: Distribution of Primary Schools across Rural and Urban areas of Delhi



Of the total primary schools in Delhi in 2009-10, 69% were managed by Government. While 31% were managed by Pvt. Unaided i.e. those schools which don't get any grant from government. The number of schools managed by government decreased from 79% in 2007-08 to 69% in 2009-10 whereas the number of schools managed by private has increased.

Figure 3: Type of Management in Primary Schools of Delhi



Note: Govt. includes Department of Education, Tribal/social welfare dept., Local body

4 districts of Delhi (West, South-west, South and North-West) are very near to state average in terms of distribution of management of Primary schools. In North-west Delhi and central Delhi, the proportion of government schools is very high as compared to other districts. North east Delhi is the only district showing high concentration of Private schools.

Figure 4: Type of Management in Primary Schools across Districts in Delhi

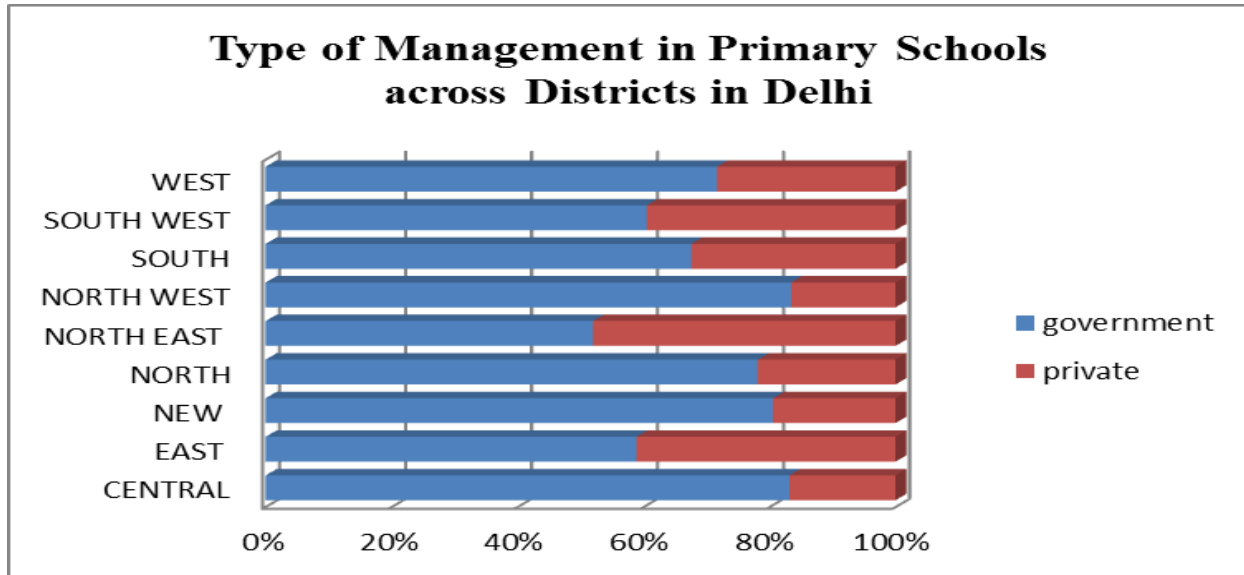


Table 2: Facilities in primary schools across Districts

Districts	Total no. of schools	Percentage of schools which has drinking water	Percentage of schools which has Common toilet	Percentage of schools which has Girls toilet	Percentage schools with blackboard
Central Delhi	267	100	23.22	70.41	100
East Delhi	326	100	23.01	77.91	100
New Delhi	36	100	30.56	97.22	100

North Delhi	183	100	28.42	78.69	100
North East Delhi	381	100	34.38	81.10	100
North West Delhi	398	100	19.10	76.13	100
South Delhi	438	100	22.15	80.59	100
South West Delhi	304	100	38.82	81.58	100
West Delhi	247	100	31.58	84.62	100

The above table is giving information regarding facilities available in primary schools across districts of delhi. The number of girls toilet has increased in almost all the districts of delhi since 2007-08 whereas the number of common toilets has gone down. Schools in all the districts had blackboard in their classrooms. Also all the primary schools have access to drinking water.

7. Educational Disparity

In order to know the extent of educational disparity in Delhi, three indexes namely infrastructure index, teachers index and outcome index has been worked out. Then a composite index called education index is calculated which is showing the overall ranking of Delhi districts.

7.1 Infrastructure Index

Infrastructure plays an important role in determining the educational outcome.

Table 3: Infrastructure index

Distri cts	Average student classroom ratio	Percentage of schools with SCR>=60	Percentage of schools without drinking water facility	Percentage of schools with common toilet	Percentage of schools with girls toilet	Infras tructu re index	R a n k
Centr al Delhi	25	3.75	0	23.22	70.41	0.747	3
East Delhi	32	3.07	0	23.01	77.91	0.686	4
New Delhi	21	0.00	0	30.56	97.22	0.913	1
North Delhi	39	13.11	0	28.42	78.69	0.551	6
North East Delhi	39	10.24	0	34.38	81.10	0.542	7
North West Delhi	33	6.53	0	19.10	76.13	0.179	9
South Delhi	28	7.08	0	22.15	80.59	0.809	2
South West Delhi	36	5.59	0	38.82	81.58	0.490	8
West Delhi	32	7.69	0	31.58	84.62	0.663	5

Source: Calculated from DISE, NUEPA, 2009-10

Five indicators are taken for calculating infrastructure index. The basic purpose of calculating this index is to know the position of one district vis-à-vis other districts in providing basic infrastructure facilities i.e. that must be there for students.

New Delhi with highest infrastructure index (0.913) and rank 1 can be treated as the best in providing infrastructure facilities followed by South Delhi (infrastructure index 0.809, rank 2) and Central Delhi (0.747, rank 3). Similarly, North-West Delhi is treated as the worst among 9 districts of Delhi. The districts with higher ranking needs to improve their infrastructure base.

7.2 Teachers Index

Table 4 : Teachers Index

Districts	Percentage of female teachers	Average Pupil-teacher ratio	% schools with PTR=60	Teachers index	Rank
Central Delhi	72.1	19.9	5.4	0.698	2
East Delhi	76.5	34.8	6.2	0.601	3
New Delhi	69.5	20.0	2.4	0.772	1
North Delhi	58.8	39.3	14.9	0.254	9
North East Delhi	60.4	41.0	8.1	0.507	7
North West Delhi	73.8	32.9	7.4	0.564	6
South Delhi	69.4	33.0	12.3	0.570	5
South West Delhi	61.1	34.5	2.6	0.492	8

West Delhi	75.8	32.4	6.2	0.593	4
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Source: Calculated from DISE, NUEPA, 2009-10

Quality of education also depends on the availability of teachers. Presence of female teachers works as incentive for parents to send their girl child to schools. Pupil-teacher ratio can be seen as an effective indicator of the quality of education being provided in the schools. The all India average students-teacher ratio is 43. But it is being observed that in all districts of Delhi, the pupil-teacher ratio is very low.

In order to make teachers index 3 indicators relating to teachers are taken that do reflect the quality of education being provided in the schools of Delhi. The best district in Teachers index comes out to be New Delhi (rank 1) with teachers index value (0.772), followed by Central Delhi (0.698). The worst performing district comes out to be North Delhi with index value 0.254 (rank 9), which is reflecting the need to improve quality of teaching.

7.3 Outcome Index

Table 5: Outcome index

District	Overall GER	% SC Enrol	% ST Enrol	GPI in Enrol	RR	Outcome index	Rank
Central Delhi	133.85	9.92	0.13	0.87	6.00	0.374	9
East Delhi	109.31	9.90	0.17	0.89	4.90	0.653	2
New Delhi	164.57	14.17	1.18	0.96	4.30	0.475	7
North Delhi	122.62	11.95	0.15	0.99	6.30	0.541	6
North East Delhi	114.39	11.75	0.11	0.91	3.90	0.632	3

North West Delhi	80.47	11.09	0.23	0.79	5.50	0.459	8
South Delhi	94.26	9.07	0.57	0.94	3.70	0.561	4
South West Delhi	131.45	11.81	0.73	0.90	4.70	0.780	1
West Delhi	82.64	9.21	0.39	0.83	4.10	0.550	5

Source: Calculated from DISE, NUEPA, 2009-10

Educational enrolment at any time will depend upon supply and demand factors. Since in this paper I am only examining supply side factors, I have taken indicators related to supply factors. The result for outcome index is shown in table 5. The best performing district is South-West Delhi, outcome index value 0.780. And the worst performing district is Central Delhi. Generally it is assumed that if a school is well equipped with infrastructure facilities and quality of teaching is good then it should also perform well in terms of educational outcomes. Central Delhi is performing very well in terms of infrastructure and teachers index but its position is worst in case of outcome index. It may be due to Demand side factors for e.g. income or wealth of parents. Income is positively related to educational attainment. Other factors could also be prominent e.g. student's base is not that strong that's why he/she is not performing well in class.

Education index is a composite index, made after composing infrastructure, teachers and outcome index. The procedure used is same as in the making of other indexes. The Education index is showing the overall educational development after taking into account all aspects related to infrastructure, teaching facility, and educational outcomes. The best performing district is New Delhi, having rank 1 in education index. And the worst performing district is North-West Delhi, index value (0.408).

The districts' positions differ according to different indicators. This is quite visible from the index values given in the table. It is interesting to note that in terms of infrastructure and teachers index, the best performing district is New Delhi and in terms of outcome index, the best performing district is South-West Delhi.

This makes one to understand that the districts which are weak in a particular indicator need to be strengthened appropriately. Whereas, the districts which are better off in some indicator may need a moderate help.

Table 6: Education index

Districts	Infrastructure index	Teachers index	Outcome index	Education index	Rank
Central Delhi	0.747	0.698	0.374	0.621	4
East Delhi	0.686	0.601	0.653	0.644	3
New Delhi	0.913	0.772	0.475	0.733	1
North Delhi	0.551	0.254	0.541	0.433	8
North East Delhi	0.542	0.507	0.632	0.554	7
North West Delhi	0.179	0.564	0.459	0.408	9
South Delhi	0.809	0.570	0.561	0.646	2
South West Delhi	0.490	0.492	0.780	0.574	6
West Delhi	0.663	0.593	0.550	0.604	5

Source: Calculated from DISE, NUEPA, 2007-08

8. Conclusion

Despite the strong constitutional backing for the provision of primary education in India, status of primary education in Delhi does not report any uniformity across the districts. At an all-India level, the literacy rate for males and females is 69.75% and 56% respectively (data for census 2011). The total number of primary schools in Delhi reported was 2580 in 2009-10. South Delhi district reported maximum number of primary schools i.e. 438 which accounted for 17% of total primary schools of the states. In Delhi, majority of the schools are managed by government authorities. Of the total primary schools in Delhi, 69% were managed by Government while 31% were managed by

private authorities. Central Delhi and North West Delhi is the only district showing high concentration of private-aided schools. Almost all the schools reported common toilet and drinking water facility. In short, there are differences across districts in relation to infrastructure facilities in schools.

In order to capture the educational disparity three indices are calculated. Important indicators related to primary education are being used in the calculation of these indices. In case of infrastructure index and teachers' index, New Delhi is the best performing district. South-West Delhi is the best district termed out by the Outcome index.

Education index (Composite index), calculated after taking into account all the three indices reflects that New Delhi (Rank 1) followed by South Delhi (Rank 2) is the best performing districts. As per the Education index the worst performing district comes out to be North-West Delhi (Rank 9).

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