



Educational Disparities in India's Union Territories: Infrastructure, Literacy and Policy Needs

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

Article Information

DOI: <https://doi.org/10.56557/ajocr/2024/v9i48970>

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://prh.ikpress.org/review-history/12561>

Original Research Article

Received: 24/09/2024

Accepted: 27/11/2024

Published: 30/11/2024

ABSTRACT

This article examines the state of education in Union Territories of India, focusing on how infrastructure, literacy levels, and socio-economic factors are interconnected. The study is based on quantitative data from Indian Census 2011 & U-DISE+ 2021-2022's report on school enrolment, literacy rates, numbers of schools, and the availability of key facilities, including electricity, ramps, libraries, and digital infrastructure.

The findings show significant variations among these Union Territories like Jammu & Kashmir and Ladakh have the highest number of schools but lower literacy rates, on the other hand Lakshadweep has the lowest number schools but the highest literacy rate. The survey emphasizes on the urban-rural divide, showing that urban region generally obtain better educational outcomes and have more developed school infrastructure.

The data show cases the need for effective policy measures to reduce the gap between urban-rural and promote educational equality among regions. This article aims to determine the challenges and

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opportunities within each Union Territories and serving as a foundation for shaping policies and allocating resources to create a positive educational environment across union territories of India.

Keywords: Union territories education; literacy rates; school infrastructure; educational facilities; urban-rural divide; policy interventions; library; digital resources.

1. INTRODUCTION

The Union Territories of present a unique educational landscape shaped by diverse geographical [1], demographic and socio-economic factors.

From the Crowded streets of Delhi to the peaceful islands of Lakshadweep, each union nerritory of India has shaped its education system to meet the individual needs of its people. However, in spite of these efforts, many challenges are still remains across all union territories [2], including a lack of resources, geographical obstacles and socio-economic inequalities.

These differences often limit access to better education, creating challenges for central authorities in ensuring that policies are applied consistently while addressing the individual needs of each union territory of India.

The outcome is an ever changing education system, where opportunities for growth and local solutions exist alongside the challenges that hold back progress in the region.

2. INFRASTRUCTURE AND ITS IMPACT ON EDUCATIONAL OUTCOMES

Infrastructure plays a key role in the growth and effectiveness of school education [3] systems especially in the region of Union Territories of India. The quality of school infrastructure includes school buildings, classrooms, libraries, and digital resources plays a key role in shaping student's learning experience and academic success.

Similarly tough climates in areas like Ladakh make it more challenging to build and maintain school infrastructure. However, there are also positive example of Union territory like Delhi, where the introduction of modern and well-equipped schools has enhanced education quality and boosted student enrollment.

These model example emphasize the importance of school infrastructure and show the need to

focus more on planned investing [4] in it across all Union Territories to ensure every child has a positive learning environment

3. LITERATURE REVIEW

Choudhary [5] discussion of the effects of centralized decision-making on educational policies in the Union of India, Choudhary emphasizes how the wildly disparate geographic and socioeconomic circumstances within a region affect how policies are implemented.

Also research emphasizes the differences in educational infrastructure and the challenges of notable balance between local realities and standard policy measures. In order to analyze the discrepancies found in the survey, Choudhary's knowledge offers a thorough framework and operational setup for realizing the difficulties of putting effective educational changes into practice.

Sahu [6] discusses the difficulties in education in remote areas, with a particular focus on Lakshadweep and the Andaman & Nicobar Islands. The study emphasizes the particular challenges that these regions facing like inadequate resources and infrastructure, which have an effect on educational results.

Sahu's study tells about the challenges faced in isolated places offer important background information for understanding the differences in infrastructure & literacy rates that the survey shows.

4. INTRODUCTION OF THE SURVEY

This survey comprehensively analyzes educational infrastructure and literacy rates across various Union Territories of India. It encompasses multiple dimensions, including literacy rates segmented by gender and urban-rural divides, the distribution of schools, the availability of essential facilities such as electricity and ramps, and educational resources like libraries and computers. By examining these aspects, the survey aims to highlight disparities

and opportunities in educational development across different regions.

4.1 Key Objectives of the Survey

- I. **Evaluate Educational Indicators:** Analyze and compare literacy rates, school distribution, and the availability of essential educational facilities across Union Territories.
- II. **Identify Regional Disparities:** Highlight significant differences in educational infrastructures and outcomes between various Union Territories.
- III. **Assess Infrastructure Impact:** Examine how infrastructure quality, including facilities like libraries/reading room/book banks, ramps, electricity, solar, computers and internet, influences educational performance.
- IV. **Inform Policy Development:** Provide data-driven insights to guide policy improvements and targeted interventions for enhancing educational equity and resource allocation across Union Territories.

5. METHODOLOGY

The survey employs a quantitative approach to analyze educational data across Union Territories. Literacy rates are derived from the Census 2011 data⁴, providing a demographic overview of literacy by gender and location. Other educational metrics, including school distribution, facilities, and resources, are sourced from the U-DISE+ 2021-22 report [7,8]. This methodology ensures a robust analysis of educational infrastructure and resource availability across regions [9].

5.1 Data Analysis

Quantitative data obtained from the survey were analyzed using statistical methods to identify patterns, correlations, and trends.

6. RESULTS AND DISCUSSION

6.1 Data Representation

Table 1 presents literacy rates segmented by gender and urban-rural location across various Union Territories. The data highlights differences in literacy between rural and urban areas as well as between male and female populations [10]. For instance, Lakshadweep shows the highest overall literacy rate at 91.85%, with a notable distinction between rural and urban literacy rates,

especially among males [11]. Jammu and Kashmir exhibit the lowest overall literacy rate at 67.16%, with significant disparities between rural and urban areas. The data underscores the impact of geographical and gender factors on literacy rates, revealing that urban areas generally have higher literacy rates compared to rural areas, and male literacy rates often exceed those of females.

Table 2 presents the distribution of schools across various Union Territories in India, detailing both the total number of schools and their respective percentages relative to the national total. The data reveals significant disparities, with Jammu & Kashmir comprising the majority at 77.26%, followed by Delhi at 15.07%. Union Territories like Lakshadweep and Chandigarh represent the lowest proportions, with 0.10% and 0.62%, respectively. This distribution highlights the concentration of educational infrastructure in specific regions, emphasizing the need for targeted policy interventions to address regional imbalances in school availability across Union Territories.

Table 3 illustrates the distribution of schools and literacy rates across various Union Territories in India. Jammu & Kashmir and Ladakh, with 79.88% of the total schools, exhibit the lowest literacy rate of 67.16%. Conversely, Lakshadweep, with the least number of schools at 0.1%, achieves the highest literacy rate of 91.85%. Delhi, with a moderate share of 15.07% of schools, shows a relatively high literacy rate of 86.21%. This data highlights significant regional disparities, where high school numbers do not necessarily correlate with high literacy rates, emphasizing the need for targeted interventions to improve educational outcomes in less literate regions.

Table 4 illustrates the distribution of schools between rural and urban areas across the Union Territories of India, highlighting significant disparities in educational infrastructure. Jammu & Kashmir has the highest percentage of rural schools at 88.72%, while Chandigarh and Delhi have the most urban-centric distribution, with 100% and 95.98% of their schools located in urban areas, respectively. Ladakh and Lakshadweep also exhibit a strong rural presence. The data underscores the urban-rural divide in educational resources, which is critical for informing policy aimed at achieving balanced educational development across these regions.

Table 1. Literacy Rates by Gender and Urban-Rural Divide Across Union Territories in India

Name of union territories	Rural Male	Rural Female	Rural Literacy	Urban Male	Urban Female	Urban Literacy	Overall Literacy
Lakshadweep	94.53%	88.50%	91.58%	95.84%	87.79%	91.92%	91.85%
Daman and Diu	89.43%	71.93%	81.36%	92.10%	82.88%	88.96%	87.10%
A. and N. Islands	88.53%	79.85%	84.50%	93.11%	86.63%	90.10%	86.63%
Delhi	89.37%	73.10%	81.86%	90.98%	80.95%	86.32%	86.21%
Chandigarh	85.77%	73.17%	80.75%	90.11%	81.38%	86.19%	86.05%
Puducherry	87.44%	73.02%	80.10%	93.03%	84.17%	88.49%	85.85%
D. and N. Haveli	76.40%	49.58%	64.12%	93.99%	83.38%	89.79%	76.24%
Jammu and Kashmir	73.76%	51.64%	63.18%	83.92%	69.01%	77.12%	67.16%

(Note: A & N Islands = Andaman & Nicobar Islands, D & N H and D & D = Dadra & Nagar Haveli and Daman & Diu, J & K = Jammu & Kashmir)

Table 2. Distribution of Schools Across Union Territories in India

Name of union territories	Total No. of Schools	Percentage %
A & N Islands	416	1.12
Chandigarh	233	0.62
D & N H and D & D	460	1.23
Delhi	5619	15.07
J & K	28805	77.26
Ladakh	978	2.62
Lakshadweep	38	0.10
Puducherry	736	1.97
Grand Total	37285	

* A & N Islands = Andaman & Nicobar Islands, D & N H and D & D = Dadra & Nagar Haveli and Daman & Diu, J & K = Jammu & Kashmir

Table 3. Distribution of Schools and Literacy Rates Across Union Territories of India

Name of union territories	Sum of T No. of Schools	Percentage %	Literacy %
J & K and Ladakh	29783	79.88	67.16%
Delhi	5619	15.07	86.21%
Puducherry	736	1.97	85.85%
D & N H and D & D	460	1.23	81.67%
A& N Islands	416	1.12	86.63%
Chandigarh	233	0.62	86.05%
Lakshadweep	38	0.1	91.85%
Total	37285		

(Note : A & N Islands = Andaman & Nicobar Islands, D & N H and D & D = Dadra & Nagar Haveli and Daman & Diu, J & K = Jammu & Kashmir)

Table 4. Distribution of Schools in Rural and Urban Areas Across Union Territories in India

Name of union territories	Schools in Rural	Rural %	Schools in Urban	Urban %	Total Schools
A& N Islands	357	85.82	59	14.18	416
Chandigarh	0	0.00	233	100.00	233
D & N H and D & D	393	85.43	67	14.57	460
Delhi	226	4.02	5393	95.98	5619
J & K	25555	88.72	3250	11.28	28805
Ladakh	914	93.46	64	6.54	978
Lakshadweep	38	100.00	0	0.00	38
Puducherry	394	53.53	342	46.47	736
Grand Total	27877	74.77	9408	25.23	37285

(Note: A & N Islands = Andaman & Nicobar Islands, D & N H and D & D = Dadra & Nagar Haveli and Daman & Diu, J & K = Jammu & Kashmir)

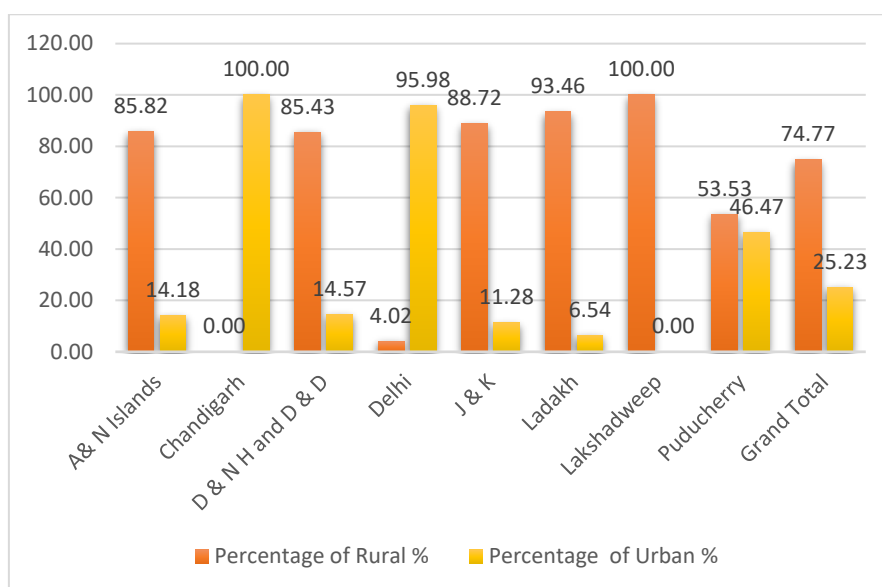


Fig. 1. Distribution of schools between rural and urban areas across the Union Territories of India

Table 5. Availability of Electricity and Solar Panels in Schools Across Union Territories in India

Name of union territories	Total No. of Schools	Sum of Electricity	Sum of Functional Electricity	Percent age %	Sum of Solar Panel	Percent age %
A & N Islands	416	386	386	100.00	19	4.57
Chandigarh	233	233	233	100.00	161	69.10
D & N H and D & D	460	460	460	100.00	64	13.91
Delhi	5619	5619	5619	100.00	1712	30.47
J & K	28805	22054	21011	95.27	3479	12.08
Ladakh	978	913	902	98.80	211	21.57
Lakshadweep	38	38	38	100.00	2	5.26
Puducherry	736	736	736	100.00	34	4.62
Grand Total	37285	30439	29385	96.54	5682	15.24

(Note : A & N Islands = Andaman & Nicobar Islands, D & N H and D & D = Dadra & Nagar Haveli and Daman & Diu, J & K = Jammu & Kashmir)

Table 6. Availability of Ramps and Newspapers in Schools Across Union Territories in India

Name of union territories	Total No. of Schools	Sum of Ramps	Ramps %	Sum of Newspaper	Newspaper %
A& N Islands	416	261	62.74	140	33.65
Chandigarh	233	204	87.55	202	86.70
D & N H and D & D	460	427	92.83	184	40.00
Delhi	5619	5619	100.00	3506	62.40
J & K	28805	11334	39.35	6213	21.57
Ladakh	978	770	78.73	132	13.50
Lakshadweep	38	36	94.74	20	52.63
Puducherry	736	481	65.35	484	65.76
Grand Total	37285	19132	51.31	10881	29.18

(Note : A & N Islands = Andaman & Nicobar Islands, D & N H and D & D = Dadra & Nagar Haveli and Daman & Diu, J & K = Jammu & Kashmir)

Table 5 presents data on the availability of electricity and functional solar panels in schools across various Union Territories of India. Nearly all schools have access to electricity, with a functional rate of 96.54%. Jammu & Kashmir, while having the highest number of schools, shows a slightly lower functional electricity rate at 95.27%. Solar panel usage varies significantly, with Chandigarh leading at 69.10%, while other regions like Lakshadweep and A & N Islands show minimal reliance on solar energy. This data highlights both the extensive electrification of schools and the varying adoption of renewable energy sources across Union Territories.

Table 6 provides an overview of the availability of ramps for accessibility and newspapers for educational resources in schools across Union Territories in India. The data reveals a wide range in accessibility, with Delhi achieving 100% ramp availability, while Jammu & Kashmir lags at 39.35%. Similarly, the presence of newspapers in schools varies, with Chandigarh and Puducherry having high availability at 86.70% and 65.76%, respectively, compared to a lower percentage in Ladakh and Jammu & Kashmir. These figures highlight disparities in both physical accessibility and the provision of informational resources, emphasizing the need for targeted improvements.

Table 7 details the availability of libraries, reading corners, or book banks, as well as the presence

of librarians across various school categories in Union Territories of India. The data reveals a significant disparity, with Kendriya Vidyalayas and Jawahar Navodaya Vidyalayas exhibiting the highest library and librarian availability at 91.84% and 88.89%, respectively. In contrast, Department of Education schools, which comprise the majority of total schools, show a much lower percentage at 9.16%. The overall availability of Librarians across all school categories stands at 17.19%, highlighting the need for enhanced resource allocation to improve library services and access to librarians across all educational institutions.

Table 8 presents data on the availability of computers and internet access across schools in various Union Territories of India. The figures illustrate significant variation in the penetration of technology within educational institutions. While Delhi, Lakshadweep, and Chandigarh exhibit full computer availability, Jammu & Kashmir shows a considerably lower percentage at 33.44%. Internet access in schools follows a similar pattern, with high connectivity in Delhi and Chandigarh but much lower levels in regions like Jammu & Kashmir and Ladakh. The overall percentage of schools with computers stands at 46.65%, while 43.03% of all schools have internet access. This data highlights the digital divide and underscores the need for targeted interventions to enhance technological infrastructure across Union Territories.

Table 7. Availability of Libraries, Reading Corners, Book Banks, and Librarians Across Different School Categories in Union Territories

Name of union territories	Sum of Library or Reading Corner or Book Bank	Sum of Librarian	Sum of Total No. of Schools	Librarian in Libraries %
Department of Education	19423	1780	26271	9.16
Government Aided	320	159	326	49.69
Jawahar Navodaya Vidyalaya	36	32	36	88.89
Kendriya Vidyalaya / Central School	98	90	98	91.84
Local body	1670	89	1670	5.33
Madarsa recognized (by Wakf board/Madarsa Board)	54	15	71	27.78
Madarsa unrecognized	6	0	8	0.00
Other Central Govt. Schools	3	3	3	100.00
Private Unaided (Recognized)	7579	2850	8740	37.60
Social welfare Department	7	1	8	14.29
Unrecognized	36	6	54	16.67
Grand Total	29232	5025	37285	17.19

Table 8. Availability of Computers and Internet Access Across Union Territories in India

Name of union territories	Total Schools	Sum of Computer Available	% of Computers in Schools	Sum of Internet	% of Internet in Computers	% of Internet in Schools
A & N Islands	416	278	66.83	187	67.27	44.95
Chandigarh	233	233	100.00	230	98.71	98.71
D & N H and D & D	460	410	89.13	264	64.39	57.39
Delhi	5619	5619	100.00	5619	100.00	100.00
J & K	28805	9631	33.44	8566	88.94	29.74
Ladakh	978	452	46.22	418	92.48	42.74
Lakshadweep	38	38	100.00	37	97.37	97.37
Puducherry	736	733	99.59	724	98.77	98.37
Grand Total	37285	17394	46.65	16045	92.24	43.03

(Note : A & N Islands = Andaman & Nicobar Islands, D & N H and D & D = Dadra & Nagar Haveli and Daman & Diu, J & K = Jammu & Kashmir)

Table 9. Distribution of School Management Types Across Union Territories in India

School Management	A & N Islands	Chandigarh	D & N H and D & D	Delhi	J & K	Ladakh	Lakshadweep	Puducherry	Total	%
Department of Education	329	116	382	1047	23117	832	36	412	26271	70.46
Government Aided	2	7	8	247	1	28		33	326	0.87
Jawahar Navodaya Vidyalaya	3	1	3	2	20	2	1	4	36	0.10
Kendriya Vidyalaya / Central School	2	4	2	46	36	3	1	4	98	0.26
Local body	8		1	1661					1670	4.48
Madarsa recognized (by Wakf board/Madarsa Board)			1		70				71	0.19
Madarsa unrecognized		3			5				8	0.02
Other Central Govt. Schools		2				1			3	0.01
Private Unaided (Recognized)	72	76	63	2610	5526	112		281	8740	23.44
Social welfare Department				6				2	8	0.02
Unrecognized		24			30				54	0.14
Grand Total	416	233	460	5619	28805	978	38	736	37285	

(Note: A & N Islands = Andaman & Nicobar Islands, D & N H and D & D = Dadra & Nagar Haveli and Daman & Diu, J & K = Jammu & Kashmir)

Table 9 outlines the distribution of different types of school management across Union Territories in India. The data shows that the Department of Education manages the majority of schools, comprising 70.46% of the total, with a particularly high concentration in Jammu & Kashmir (23117 schools). Private Unaided (Recognized) schools account for 23.44% of the total, with a notable presence in Delhi. Other management types, including Government Aided, Kendriya Vidyalaya, and Madarsa schools, represent a smaller proportion. This distribution highlights the predominance of Department of Education institutions and the varied presence of other management categories across the regions [12].

There is a major educational infrastructure gap in literacy levels of the Union Territories. Jammu & Kashmir and Ladakh, which comprise 79.88% of schools, account for the lowest level of literacy at 67.16%. Lakshadweep, of whom schools account for only 0.1%, has furnished the highest literacy rate at 91.85%. Delhi will certainly pose an impressive high level of literacy at 86.21% despite accounting for 15.07% of all the schools. The data really shows that there is still a major urban-rural divide, with overall literacy often being much higher and educational facilities more available in the urban areas than in the rural regions [13]. The analysis highlights the need for targeted interventions to address the disparities in educational infrastructure and literacy rates across regions, emphasizing that a higher number of schools does not always correlate with better educational outcomes.

7. CONCLUSION

The survey shows us an overall analysis of Educational Infrastructure and Literacy rate across all the union territories of India. Although schools in Jammu & Kashmir and Ladakh have a better percentage of educational infrastructure but these regions still show the low literacy rates highlighting a gap between resources and academic result.

On the other hand Lakshadweep which had lowest number of schools in the region has highest literacy rates which clearly shows that less number of schools can even yield better educational outcomes when it comes up with good school infrastructures.

The urban rural divide is clearly seen, with urban region having higher literacy rate and better resources as compared to their rural part of the

region. These gaps require focused actions targeting at improving infrastructures and resources for school education in the rural areas. Addressing these issues will be essential for achieving educational equity and enhancing overall learning outcomes across all Union Territories of India. The findings emphasize the need for specific policies, planned investments & resource distribution in the region to address gaps and ensure better educational opportunities for all union territories.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that generative AI technology has been used during the editing of this manuscript for grammar corrections and sentence formation improvements of this manuscript. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
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