



# Spatial Distribution Of Educational Disparities – A Case Study Of Barabanki District

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## ABSTRACT

Education is a fundamental instrument of social transformation and human development. It enhances awareness, improves living standards, and contributes significantly to economic and regional progress. Despite considerable improvement in literacy levels in India during 2001–2011, disparities in educational development continue to persist across regions and social groups. The present study focuses on the spatial distribution of educational disparities in Barabanki district, Uttar Pradesh. The study is based on secondary data collected from the Population Census of India and District Statistical Handbooks. Various indicators such as literacy, educational infrastructure, and teacher availability have been analysed to understand the pattern of educational development across development blocks of the district.

**Keywords:** Educational Disparities, Spatial Distribution, Literacy Rate, Educational Infrastructure, Regional Inequality, Educational Development etc.

## INTRODUCTION

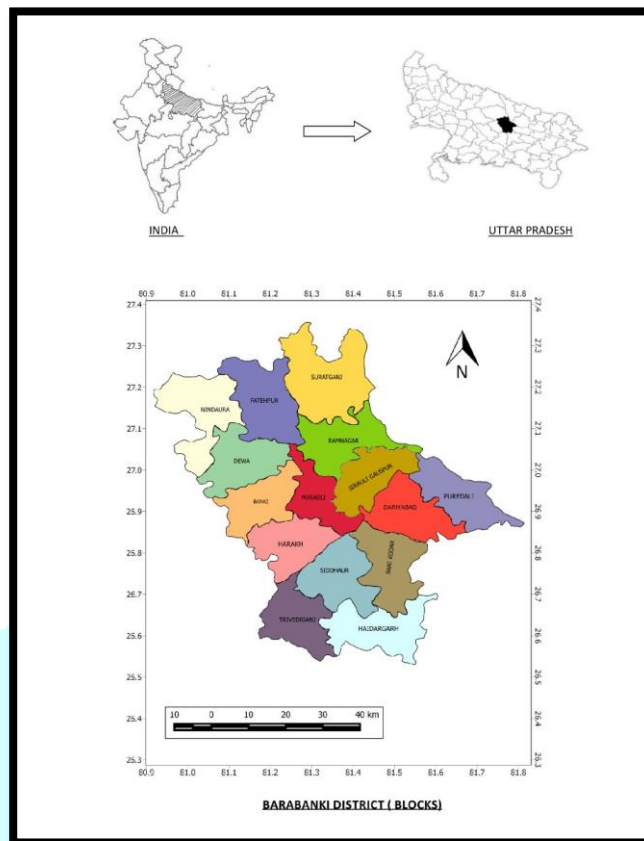
Educational disparities are influenced by several socio-economic and cultural factors such as poverty, caste structure, gender inequality, inadequate infrastructure, and traditional social attitudes. Aneesh MR, Maya K, and Aneesh KA (2024) observed that educational inequality in India remains significantly influenced by rural–urban differences, limited access to higher education, financial constraints, and socio-economic factors. Barabanki district presents a clear example of uneven educational development at the intra-district level. According to the Census of India 2011, the district had a total population of 3,260,699, of which 1,692,458 persons were literate, including 1,010,518 males and 681,940 females. The literacy rate increased from 47.39% in 2001 to 61.75% in 2011, indicating considerable educational progress during the decade. However, disparities continue to persist between rural and urban areas as well as between male and female literacy levels. Urban literacy remains significantly higher than rural literacy, while male literacy exceeds female literacy across most development blocks.

The educational infrastructure of Barabanki district during 2010–11 also reflects a distinctly uneven spatial pattern. The district recorded approximately 153.9 primary schools per 100 sq. km, indicating relatively better accessibility to elementary education. However, the density declined sharply at the upper primary level to about 39.1 schools per 100 sq. km, revealing a major transition gap in the educational structure. At the secondary level, the density improved marginally to around 50.5 schools per 100 sq. km, though the distribution remained inconsistent across blocks. In contrast, higher educational institutions, including degree and postgraduate colleges, were extremely limited, with only 4.15 institutions per 100 sq. km. This pattern highlights a pyramidal and bottom-heavy structure of educational development, where the widespread presence of primary institutions is not proportionately supported by higher educational facilities, thereby restricting educational mobility and regional human capital formation.

In this context, the present study attempts to analyse the spatial distribution of educational disparities in Barabanki district at the block level. The study focuses on literacy patterns, educational infrastructure, and educational development indicators to identify regional inequalities and understand the nature of educational imbalance within the district.

### **STUDY AREA**

The study area of this paper is a district of the Uttar Pradesh which is Barabanki. It is situated between 27°19' and 26°30' N latitude and 80°05' and 81°51' E longitude. The district is on the east of Lucknow, capital of Uttar Pradesh. District Faizabad is on the East, District Sitapur in North, Districts of Gonda and Bahraich in Northeast, Rae Barriely district on the South and district Sultanpur on the Southeast. The total geographical area of Barabanki is 4402 sq km. In 2011, Barabanki had a population of 3,260,699 of which male and female were 1,707,073 and 1,553,626 respectively. There was a change of 21.96% in population compared to population as per 2001. Average literacy rate of Barabanki district in 2011 is 61.75% as compared to 61.75% of 2001. Male and Female literacy rate in 2011 is 70.27% and 52.34%. while according to 2001 census, male and female literacy rate are 58.85% and 34.29% respectively. Sex ratio of Barabanki district in 2011 is 910 while in 2001, it was 887.

**BASE MAP OF STUDY AREA**

SOURCE: MAP CREATED BY AUTHOR USING QGIS SOFTWARE

**OBJECTIVES:**

The main objectives of this study are as follows:

1. To examine the spatial distribution of educational development in Barabanki District at the block level.
2. To analyse the pattern of literacy disparities with special reference to male, female, Scheduled Caste, and Scheduled Tribe literacy rates.
3. To assess the spatial distribution of educational infrastructure such as primary, upper primary, secondary schools, degree colleges, and postgraduate institutions.
4. To evaluate inter-block variations in teacher availability and educational facilities within the district.
5. To construct a composite index of educational development in order to identify educationally developed and backward blocks of the district.
6. To identify the major factors responsible for regional educational disparities in the study area.
7. To suggest suitable measures for reducing educational inequalities and promoting balanced educational development in the district.

**DATABASE AND METHDOLOGY:**

The present study is exclusively based on secondary data collected from:

1. Census of India
2. Annual reports of government of Uttar Pradesh
3. Published Book
4. Journal
5. Directorate of Economics and Statistics, Government of Uttar Pradesh, UPDES (Statistical Portal)

**1.Deprivation and Development Score**

$$\text{Deprivation score} = \frac{\text{value of the block at top position} - \text{value of the specific block}}{\text{value of the block at top position} - \text{value of the block at bottom position}}$$

$$\text{Development score} = 1 - \text{Deprivation score}$$

**2.Composite Index:**

Composite Index of Development is given by:

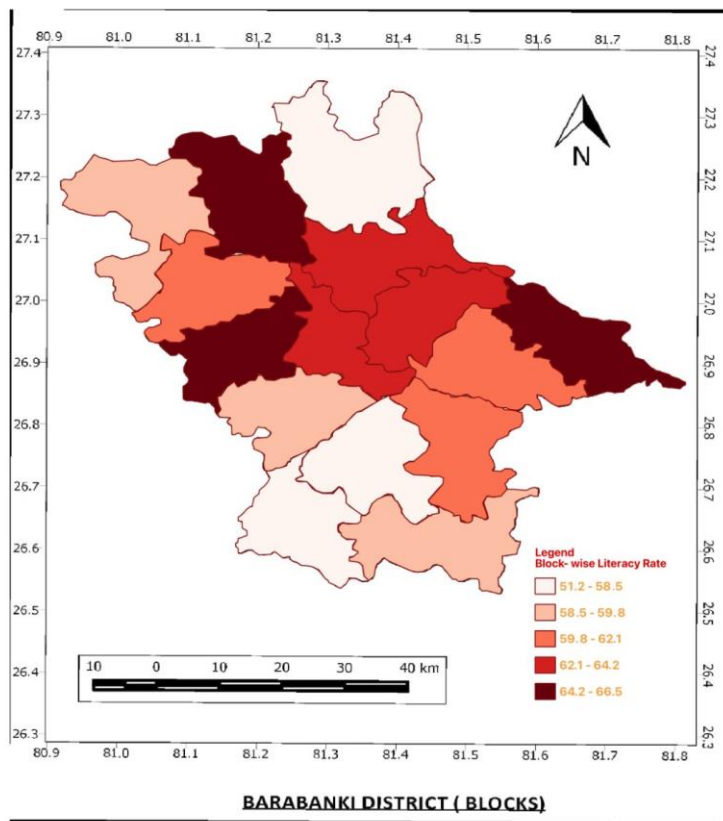
Composite index= summation of development scores each indicators divided by total no of indicators.

**Key Indicators of Educational Inequality and Development Disparities in Barabanki District.**

S.No.	Indicator
X1	Literacy Rate
X2	Female Literacy Rate
X3	Male Literacy Rate
X4	SC Literacy Rate
X5	ST Literacy Rate
X6	Number of Primary School per 100 sq km of area
X7	Number of Upper Primary Schools per 100 sq km of area
X8	Number of Secondary Schools per 100 sq km of area
X9	Number of Degree Colleges per 100 sq km of area
X10	Number of Post Graduate Colleges per 100 sq km of area
X11	Number of Teachers per Primary Schools
X12	Number of Teachers per Upper Primary Schools
X13	Number of Teachers per Secondary Schools
X14	Number of Teachers per Degree Colleges
X15	Number of Teachers per Postgraduate Colleges

**Results and key findings:**

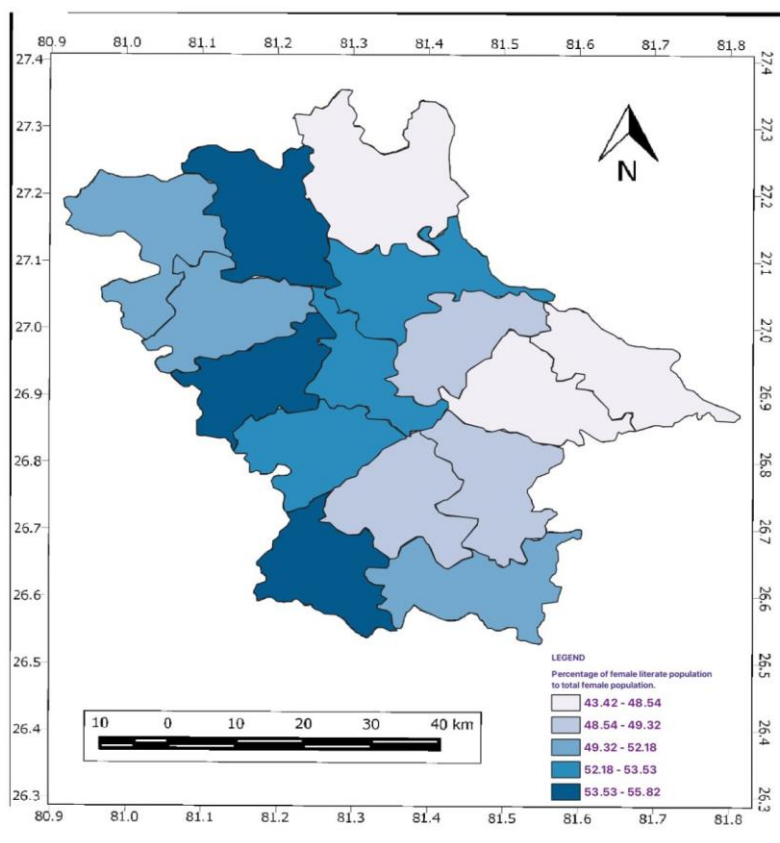
**FIGURE 1: SPATIAL DISTRIBUTION OF LITERACY RATE IN BARABANKI DISTRICT**



Source: Based on data from District Statistical Handbook, Barabanki and map created by the Author using QGIS software

Average Literacy rate of Barabanki district is 61.75% in 2011. The number of blocks having literacy rate above average literacy rate of the study are seven which are Fatehpur, Ramanagar, Dewa, Banki, Harakh, Masauli and Trivediganj while there are eight blocks of Barabanki district whose literacy rate is below average literacy rate of Barabanki and they are Nindauara, Suratganj, Pure dalai, Sirauli gauspur, Siddhaur, Haidergarh Dariyabad and Bani kodar. Banki has the highest literacy rate which is 66.19% while Pure dalai has the lowest literacy rate which is 51.48%.

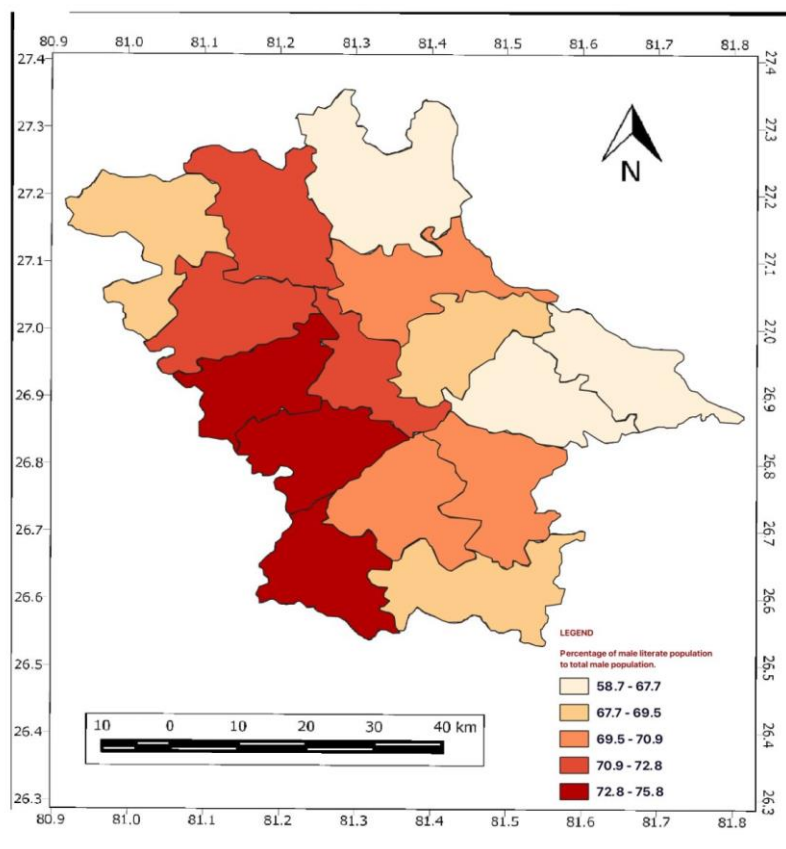
FIGURE 2: SPATIAL DISTRIBUTION OF FEMALE LITERACY RATE IN BARABANKI DISTRICT



Source: Based on data from District Statistical Handbook, Barabanki and map created by the Author using QGIS software

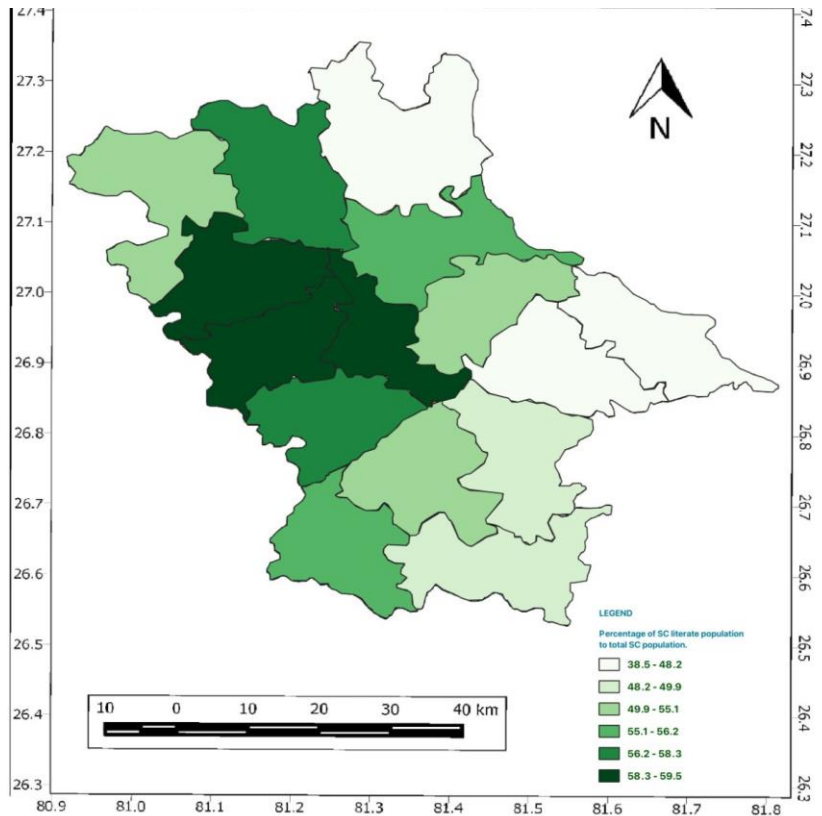
The average literacy rate of female is 52.34% according to 2011 census of Barabanki district. The number of blocks above this female literacy rate of the study area are five which are Fatehpur, Banki, Harakh, Masauli and Trivediganj while the number of blocks fall below this value are ten which are Nindaura, Ramanagar, Surtaganj, Dewa, Sirauli gaupsur, Pure dalai, Haidergarh, Dariyabad, Siddhaur and Bani Kodar. Banki block has the highest female literacy rate with a value of 55.82% while Pure dalai block has the lowest female literacy rate which is 43.42%

**FIGURE 3: SPATIAL DISTRIBUTION OF MALE LITERACY RATE IN BARABANKI DISTRICT**



Source: Based on data from District Statistical Handbook, Barabanki and map created by the Author using QGIS software

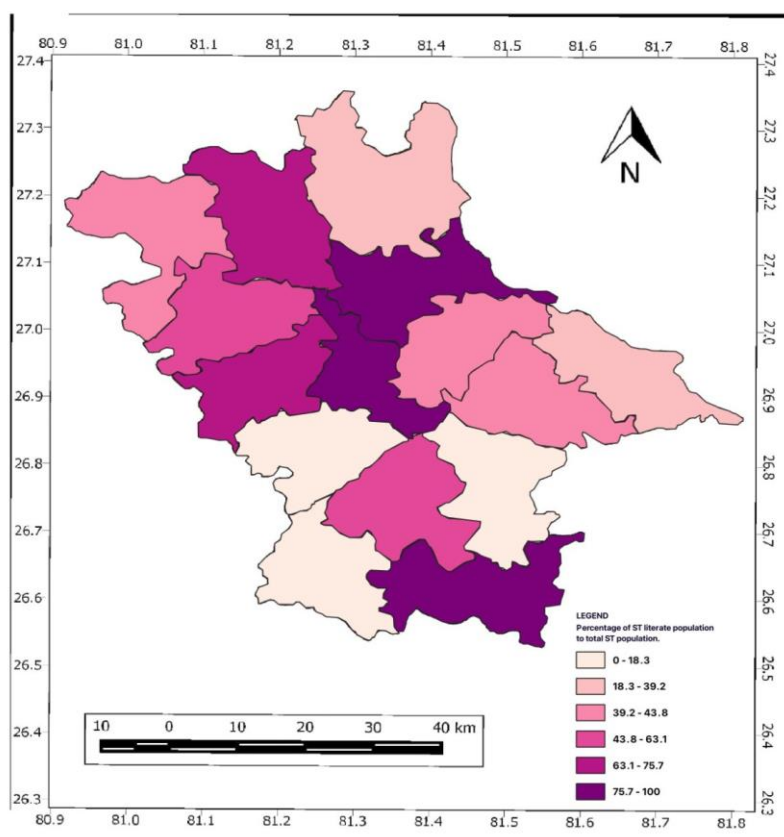
The average literacy rate of male of Barabanki is 70.27% in 2011. The number of blocks above this value are seven which are Fatehpur, Ramanagar, Dewa, Banki, Harakh, Masauli and Trivediganj . blocks fall below this value are eight Nindauara, Suratganj, Pure dalai, Sirauli gauspur, Siddhaur, Haidergarh Dariyabad and Bani kodar. Trivediganj block has the highest male literacy rate which is 75.81% while Pure dalai block has the lowest male literacy rate which is 58.70%.

**FIGURE 4: SPATIAL DISTRIBUTION OF SC LITERACY RATE IN BARABANKI DISTRICT**

Source: Based on data from District Statistical Handbook, Barabanki and map created by the Author using QGIS software

The literacy rate of Scheduled Castes (SC) in the district shows a moderately balanced spatial distribution. The district average literacy rate is 52.87%. Out of 15 development blocks, 8 blocks which are Nindura, Fatehpur, Ramnagar, Deva, Banki, Harakh, Masauli, and Trivediganj record literacy rates above the district average, indicating relatively better educational attainment among SCs in these areas. In contrast, 7 blocks which are Suratganj, Sirauli Gauspur, Dariyabad, Pure Dalai, Bani Kodar, Siddhaur, and Haidergarh—fall below the average, reflecting comparatively lower literacy levels. This distribution suggests moderate regional disparity, though a slightly higher number of blocks perform above average.

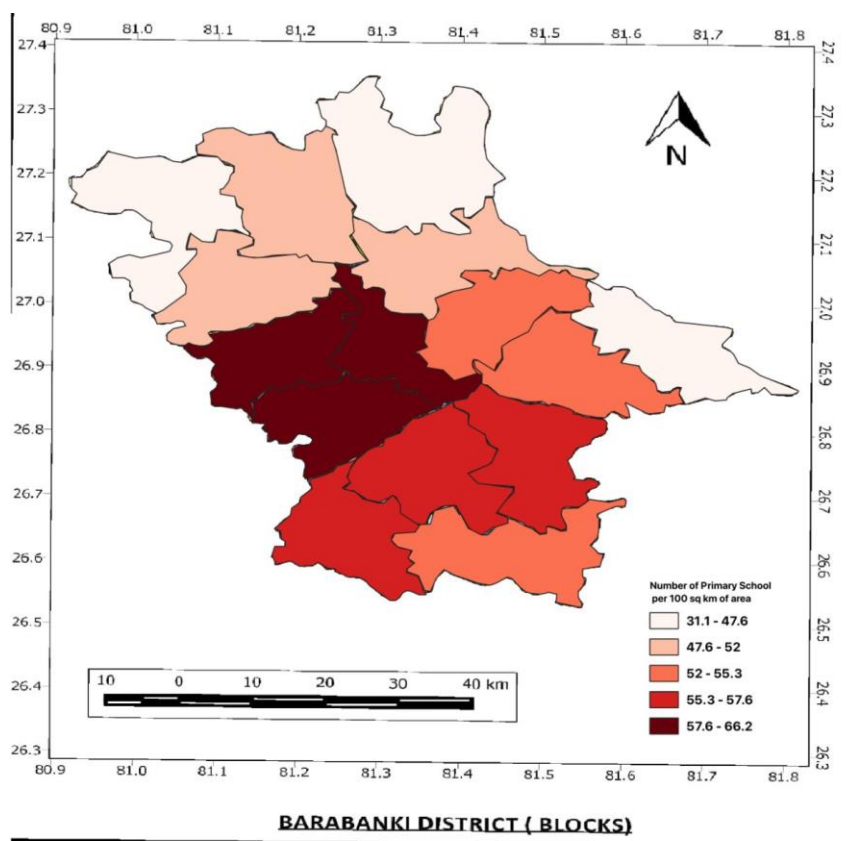
FIGURE 5: SPATIAL DISTRIBUTION OF ST LITERACY RATE IN BARBANKI DISTRICT



Source: Based on data from District Statistical Handbook, Barabanki and map created by the Author using QGIS software

The literacy rate of Scheduled Tribes (ST) in the district exhibits a highly uneven spatial pattern with significant inter-block variation. The district average literacy rate is 31.33%. Out of the total 15 development blocks, 11 blocks which are Nindura, Fatehpur, Suratganj, Ramnagar, Deva, Banki, Masauli, Sirauli Gauspur, Dariyabad, Siddhaur, and Haidergarh—record literacy rates above the district average, indicating relatively better literacy levels among ST populations in these areas. In contrast, 4 blocks—Harakh, Pure Dalai, Bani Kodar, and Trivediganj—fall below the average, reflecting comparatively poor literacy conditions. The literacy rate of Scheduled Castes (SC) in the district shows a moderately balanced spatial distribution. The district average literacy rate is 52.87%. Out of 15 development blocks, 8 blocks—Nindura, Fatehpur, Ramnagar, Deva, Banki, Harkh, Masauli, and Trivediganj—record literacy rates above the district average, indicating relatively better educational attainment among SCs in these areas.

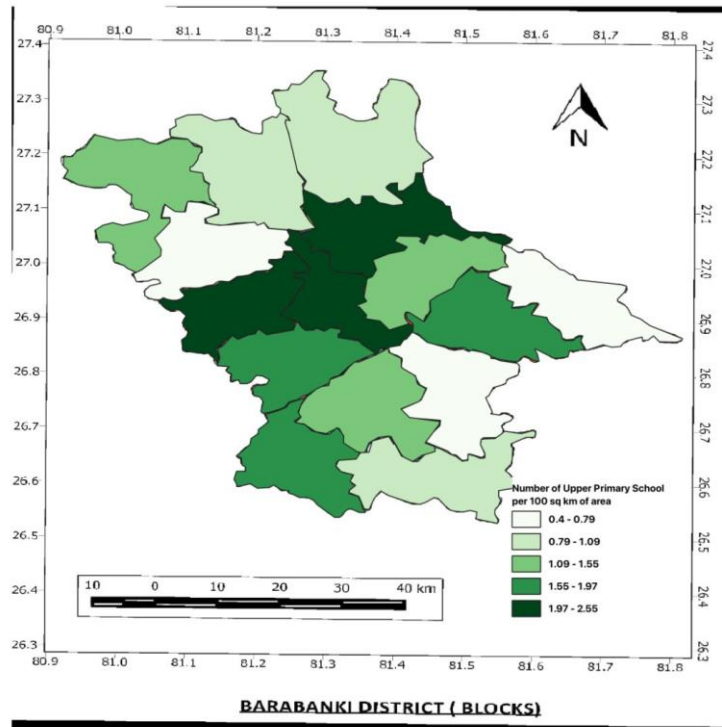
**FIGURE 6: SPATIAL DISTRIBUTION OF PRIMARY SCHOOLS PER 100 SQ. KM IN BARABANKI DISTRICT**



Source: Based on data from District Statistical Handbook, Barabanki and map created by the Author using QGIS software

The overall average density is 49.34 primary schools per 100 sq. km, which serves as a benchmark for comparison. A majority of the development blocks are Banki (66.22), Masauli (62.32), Harkh (60.61), Siddhaur (56.88), Bani Kodar (56.24), Trivediganj (55.78), Dariyabad (54.90), Haidergarh (54.27), Sirauli Gauspur (52.11), Fatehpur (51.71), and Ramnagar (50.49) exhibit densities above the district average. On the other hand, Deva (48.76), Nindura (42.93), Suratganj (39.43), and Pure Dalai (31.13) fall below the district average, reflecting comparatively lower availability of primary schools. Pure Dalai shows the lowest density in the district, indicating a significant gap in educational infrastructure relative to its area.

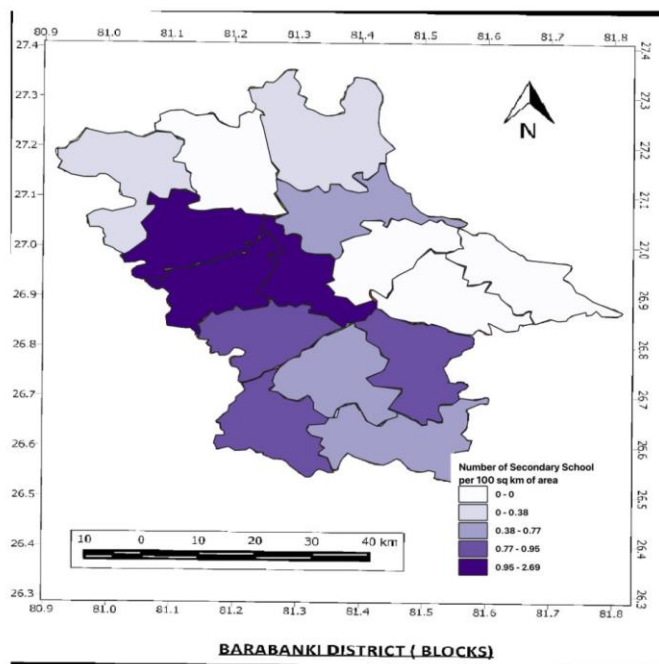
**FIGURE 7: SPATIAL DISTRIBUTION OF UPPER PRIMARY SCHOOLS PER 100 SQ. KM**



Source: Based on data from District Statistical Handbook, Barabanki and map created by Author using QGIS software

The district average density is 1.41 schools per 100 sq. km. A few development blocks namely Banki (2.55), Ramnagar (2.52), Masauli (2.37), Harkh (1.87), Dariyabad (1.8), and Trivediganj (1.77), record densities above the In contrast, the majority of blocks, Nindura (1.35), Sirauli Gauspur (1.41), Siddhaur (1.10), Suratganj (1.07), Fatehpur (1.05), Haidergarh (0.80), Deva (0.77), Bani Kodar (0.41), and Pure Dalai (0.40) fall at or below the district average, indicating limited access to upper primary schools across large parts of the district. Pure Dalai records the lowest density, closely followed by Bani Kodar, highlighting significant gaps in infrastructure.

**FIGURE 8: SPATIAL DISTRIBUTION OF SECONDARY SCHOOLS PER 100 SQ. KM IN BARABANKI DISTRICT**



Source: Based on data from District Statistical Handbook, Barabanki and map created by Author using QGIS software

The district average density is 0.87 schools per 100 sq. km, which is considerably lower than that of primary and upper primary levels, indicating limited access to secondary education. Only a few development blocks such as Deva (2.69), Masauli (1.19), Banki (1.02), Harkh (0.93), and Trivediganj (0.89) record densities above the district average. In contrast, most blocks are Bani Kodar (0.82), Siddhaur (0.73), Ramnagar (0.42), Haidergarh (0.40), Nindura (0.34), Suratganj (0.27) fall below the district average, reflecting inadequate spatial distribution.

**Table 1: Blockwise Development Score of the Selected Indicators of Barabanki**

S.No	Block	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X14	X15
1	Nindaura	0.581	0.567	0.576	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	Fatehpur	0.879	0.975	0.809	0.9172	1.0000	0.8889	0.9860	0.4424	0.8039	0.0000	0.9500	1.0733	0.7336	0.0000
3	Suratganj	0.182	0.142	0.183	0.9443	1.0000	0.8400	0.9163	0.3792	0.7451	0.0000	0.9444	0.6119	0.3529	0.0000
4	Ramnagar	0.709	0.717	0.679	0.9171	0.7576	0.7338	0.6837	0.3457	0.7255	0.0000	0.9473	0.6222	0.0000	0.0000
5	Dewa	0.740	0.700	0.760	0.9271	0.6883	0.7156	0.6651	0.3309	0.0000	0.0000	0.9056	0.2786	0.0000	0.0000
6	Banki	1.000	1.000	0.988	0.8695	0.6643	0.7025	0.6372	0.3048	0.0000	0.0000	0.9000	0.2272	0.5778	0.0000
7	Harakh	0.844	0.779	0.883	0.9166	0.5637	0.6774	0.4419	0.2714	0.0000	0.0000	0.8722	0.2073	0.5156	0.0000
8	Masauli	0.753	0.724	0.775	0.8913	0.3939	0.6594	0.3256	0.1561	0.0000	0.0000	0.8389	0.4711	0.0000	0.0000
9	Sidhaur	0.569	0.461	0.631	0.8798	0.3864	0.5979	0.3116	0.1487	0.0000	0.0000	0.8333	0.1393	0.0000	0.0000
10	Trivediganj	0.984	0.960	1.000	0.8608	0.3818	0.5865	0.3023	0.1264	0.0000	0.0000	0.8222	0.1294	0.0000	0.0000
11	Haidergarh	0.559	0.481	0.627	0.8412	0.3455	0.5517	0.1860	0.1004	0.0000	0.0000	0.6111	0.1244	0.0000	0.0000
12	Dariyabad	0.467	0.387	0.522	0.8399	0.3182	0.5024	0.1721	0.0000	0.0000	0.0000	0.5556	0.1204	0.0000	0.0000
13	Bani Kodar	0.576	0.465	0.645	0.8975	0.2727	0.3363	0.0047	0.0000	0.0000	0.0000	0.5056	0.1194	0.0000	0.0000
14	Pure Dalai	0.000	0.000	0.000	0.9000	0.1967	0.2365	0.4698	0.0000	0.0000	0.0000	0.4611	0.0025	0.0000	0.0000
15	Sirauli Gauspur	0.485	0.420	0.529	0.8550	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

*Source : Computed by Author*

**Table 2 : Block wise Composite Index of Educational Disparity of Barabanki**

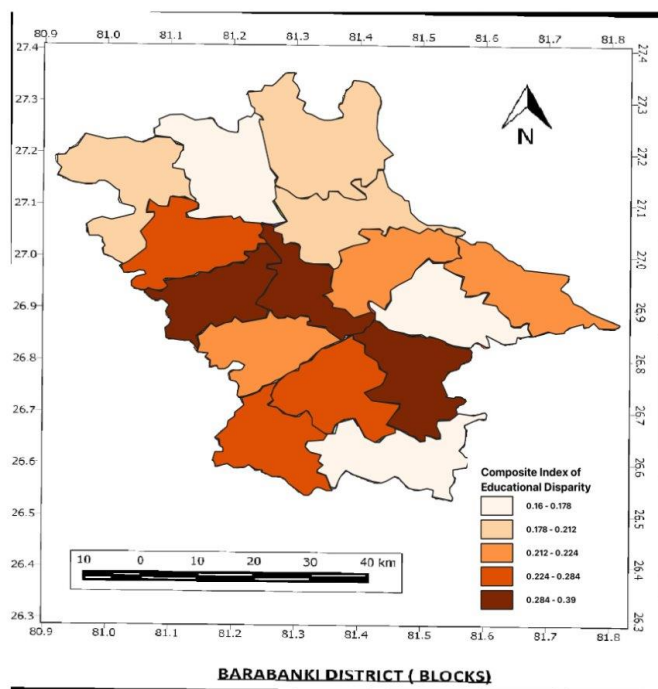
S.No	Block	Composite Index
1	Banki	0.3986
2	Bani Kodar	0.3633
3	Masauli	0.3015
4	Dewa	0.2834
5	Siddhaur	0.2419
6	Trivediganj	0.2335
7	Puredalai	0.2275
8	Harakh	0.2252
9	Sirauli Gauspur	0.2216
10	Ramnagar	0.2077
11	Suratganj	0.2075
12	Nindura	0.1898
13	Dariyabad	0.1726
14	Fatehpur	0.1706
15	Haidargarh	0.1616

Source: Computed by author

The composite analysis of educational development across the fifteen administrative blocks reveal significant spatial disparities in infrastructure and human resource allocation. The Composite Index of Educational Development, calculated using fifteen distinct indicators, shows a district-wide average of 0.2404, which highlights a generally low-to-moderate level of educational attainment and facility density across the region. Bankiemerges as the most developed unit with a composite index of 0.3986, followed by Bani Kodar at 0.3633; both blocks benefit from superior institutional density and more favorable teacher-to-school ratios in higher education categories.

In contrast, blocks such as Haidargarh, Fatehpur, and Dariyabad exhibit the highest levels of deprivation, with composite index values falling below 0.1800. This underperformance is primarily driven by a critical absence of secondary and post-graduate infrastructure, leading to zero scores across multiple indicators that significantly lower their overall development averages.

**FIGURE 9: SPATIAL PATTERN OF EDUCATIONAL DISPARITY IN BARABANKI DISTRICT**



Source: Based on data from District Statistical Handbook, Barabanki and map created by the Author using QGIS software

**TABLE 17: SPATIAL PATTERN OF EDUCATIONAL DISPARITY IN BARABANKI DISTRICT**

Class	Category	Value	Blocks
Highly Developed	Above Mean + 1 SD	> 0.3072	Banki, Bani Kodar
Developed	Mean + ½ SD to Mean + 1 SD	0.2738 – 0.3072	Masauli, Dewa
Moderately Developed	Mean – ½ SD to Mean + ½ SD	0.2070 – 0.2738	Siddhaur, Trivediganj, Puredalai, Harakh, Sirauli Gauspur, Ramnagar, Suratganj
Underdeveloped	Mean – 1 SD to Mean – ½ SD	0.1736 – 0.2070	Nindura
Highly Underdeveloped	Below Mean – 1 SD	< 0.1736	Dariyabad, Fatehpur, Haidergarh

Source: Computed by author

## CONCLUSION & SUGGESTIONS:

The analysis shows that Banki and Bani Kodar are categorized as highly developed blocks, having composite index values above Mean + 1 SD. These blocks exhibit comparatively better educational attainment and infrastructural facilities. Masauli and Dewa fall under the developed category, indicating above-average levels of educational development. Most of the blocks, namely Siddhaur, Trivediganj, Puredalai, Harakh, Sirauli Gauspur, Ramnagar, and Suratganj, belong to the moderately developed category. This reflects a moderate level of educational development and relative spatial balance within these regions. Nindaura is categorized as an underdeveloped block, whereas Dariyabad, Fatehpur, and Haidergarh are identified as highly underdeveloped due to their comparatively low composite index values falling below Mean - 1 SD. These blocks indicate lower levels of educational development and greater developmental lag.

The study further reveals that the educational structure of the district is highly imbalanced and pyramidal in nature. Primary educational institutions are relatively widespread, but the availability of upper primary, secondary, degree, and postgraduate institutions declines sharply. This uneven distribution restricts educational mobility and limits opportunities for higher education, particularly in rural and peripheral areas. Gender disparities also remain significant, as female literacy continues to lag behind male literacy across most development blocks. Similarly, disparities among Scheduled Castes and Scheduled Tribes indicate the persistence of socio-economic and social inequalities in educational attainment.

The composite index analysis clearly demonstrates the existence of intra-district educational inequalities and reflects the concentration of educational resources in a few semi-urban and administratively developed blocks. Therefore, balanced regional planning and equitable distribution of educational infrastructure are essential for achieving inclusive educational development in the district.

### Suggestions

1. Educational infrastructure should be expanded in backward blocks such as Haidargarh, Fatehpur, Dariyabad, Suratganj, and Pure Dalai to reduce regional disparities.
2. Greater emphasis should be given to the establishment of secondary schools, degree colleges, and postgraduate institutions in rural and underserved areas.
3. Government policies should focus on improving female literacy through awareness programmes, scholarships, and girls' education initiatives.
4. Adequate recruitment and balanced distribution of teachers should be ensured across all educational levels to improve the quality of education.
5. Special educational programmes should be introduced for Scheduled Castes and Scheduled Tribes to minimize social and educational inequalities.
6. Transportation and connectivity facilities should be improved in remote areas to enhance accessibility to educational institutions.
7. Modern educational facilities such as digital classrooms, libraries, laboratories, and skill-based learning centres should be developed in rural schools.

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