

# Educational Status of Western Uttar Pradesh: Spatial Patterns and Determinants

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**Abstract:** Education plays a vital role in shaping human development, social progress, and economic growth. It functions as a powerful instrument for reducing poverty, promoting gender equality, and improving health and well-being in societies. The present study examines the educational status of Western Uttar Pradesh and analyzes the spatial patterns and determinants of literacy in the region. Western Uttar Pradesh is one of the most economically developed regions of the state due to its fertile agricultural land, industrial development, and relatively higher level of urbanization. However, despite these advantages, educational inequalities persist among districts.

The study primarily focuses on literacy patterns, including total literacy rate, male literacy rate, female literacy rate, urban literacy rate, and rural literacy rate. In addition, the research evaluates educational facilities such as teacher–pupil ratio, density of educational institutions, number of institutions, student enrolment ratio, and drop-out rates. Secondary data have been used from the Census of India (2011) and the Statistical Abstract of Uttar Pradesh (2020–21). Various statistical techniques including percentage analysis, Z-score method, and Karl Pearson’s correlation coefficient were applied to examine the relationship between educational status and educational facilities.

The results reveal that educational development varies significantly among districts in Western Uttar Pradesh. Industrialized and urbanized districts such as Ghaziabad and Gautam Budh Nagar show higher literacy levels, while relatively backward districts like Moradabad, Rampur, and Badaun exhibit lower literacy rates. The correlation analysis indicates that teacher–pupil ratio, availability of degree colleges, enrolment ratios, and drop-out rates significantly influence literacy levels in the region.

The study concludes that improving educational infrastructure, strengthening teacher availability, and reducing drop-out rates are essential for enhancing educational outcomes. Policy interventions focusing on rural areas and female education can significantly reduce regional disparities and promote balanced educational development in Western Uttar Pradesh.

**Keywords:** Educational status, literacy, spatial pattern, educational facilities, Western Uttar Pradesh

## 1. Introduction

Education is widely recognized as a fundamental human right and a key driver of social and economic development. It enhances individuals’ knowledge, skills, and values, enabling them to contribute effectively to society. Education also promotes equality, reduces poverty, and improves quality of life. As a transformative process, it empowers individuals to think critically, participate in civic activities, and adapt to changing socio-economic environments.

Philosophers and scholars have long emphasized the importance of education. Aristotle described education as a process that trains individuals to fulfill their purpose in society by developing their intellectual and moral faculties. Similarly, Rabindranath Tagore believed that the highest form of education harmonizes human life with the wider universe. Swami Vivekananda defined education as the manifestation of the perfection already present within



individuals. These perspectives highlight that education goes beyond the mere transfer of knowledge; it contributes to the holistic development of individuals.

In the modern era, education is closely linked with economic growth, technological advancement, and social mobility. Countries with higher levels of education tend to achieve greater productivity, innovation, and human development. In developing countries such as India, education plays a particularly important role in reducing socio-economic inequalities and promoting inclusive growth.

However, educational development is not uniform across regions. In India, regional disparities in literacy, educational facilities, and educational outcomes remain significant. These disparities are influenced by various socio-economic, cultural, and infrastructural factors. Therefore, regional studies of education are important for understanding the spatial patterns of educational development and identifying areas requiring policy intervention.

Western Uttar Pradesh is considered one of the most developed regions of the state due to its fertile agricultural land, irrigation facilities, and industrial growth. The region includes several rapidly urbanizing districts located near the National Capital Region. Despite these advantages, significant variations in educational attainment exist among districts. Some districts show high literacy levels, while others continue to struggle with low literacy and inadequate educational facilities.

The present study aims to examine the educational status of Western Uttar Pradesh and analyze the spatial patterns and determinants influencing literacy levels. By identifying the relationship between educational indicators and educational facilities, the study seeks to provide insights that can assist policymakers and planners in improving the education system in the region.

## **2. Conceptual Framework**

Education is widely regarded as one of the most significant instruments of socio-economic development and human empowerment. It plays a crucial role in enhancing individual capabilities, promoting social mobility, and fostering economic growth. In geographical studies, education is often examined in terms of its spatial distribution, accessibility, and the socio-economic factors that influence educational attainment across regions.

The concept of education extends beyond the mere transmission of knowledge. It involves the holistic development of individuals by nurturing intellectual, moral, social, and emotional capacities. Education enables individuals to develop critical thinking skills, participate actively in society, and adapt to changing economic and technological environments. As a result, it is considered a key component of human development and national progress.

From a geographical perspective, educational development is not uniform across regions. Spatial disparities in literacy rates, access to educational institutions, and educational infrastructure are common in developing countries such as India. These disparities are influenced by several factors including economic conditions, level of urbanization, availability of educational facilities, government policies, and socio-cultural practices.

In the context of regional educational analysis, educational status is usually measured through indicators such as total literacy rate, male literacy rate, female literacy rate, rural literacy rate, and urban literacy rate. These indicators reflect the level of educational attainment and human capital development in a particular region. However, literacy levels are also influenced by the availability and quality of educational facilities such as schools, colleges, teachers, and other infrastructural resources.

The conceptual framework of the present study is based on the relationship between educational status and educational facilities. Educational status represents the outcome of educational development, while educational facilities act as determinants that influence the level of literacy and educational attainment in a region.

Educational facilities include several important components such as teacher-pupil ratio, density of educational institutions, number of schools and colleges, student enrolment ratio, and drop-out rate. A favorable teacher-pupil ratio ensures better interaction between teachers and students and improves learning outcomes. Similarly, a higher density of educational institutions increases accessibility to education and encourages enrolment.



The relationship between educational status and educational facilities can therefore be understood as a dynamic interaction where the availability of educational resources directly affects literacy levels and educational participation. Regions with better infrastructure and institutional support generally demonstrate higher literacy rates and lower drop-out rates.

In addition to infrastructural factors, socio-economic conditions also influence educational development. Urban areas often exhibit higher literacy levels due to better economic opportunities, higher awareness, and greater availability of educational institutions. In contrast, rural areas may face challenges such as poverty, limited access to schools, and socio-cultural barriers that restrict educational participation, particularly among females.

Thus, the conceptual framework of the present study emphasizes the analysis of spatial variations in educational status and the role of educational facilities in shaping these patterns. By examining the relationship between literacy indicators and institutional factors, the study aims to understand the determinants of educational development in Western Uttar Pradesh.

### 3. Literature Review

The review of literature is an important part of research as it provides an understanding of the existing studies related to the topic and helps in identifying research gaps. In the present study, various books, research papers, reports, and previous studies related to educational development, literacy patterns, and regional disparities in education have been reviewed. Some important studies related to the present research are discussed below.

Reddy, U.B. (1985) has made an attempt to analyse the level of educational development in the paper “Regional Disparities in Educational Development in India: An Inter-State Analysis”, among different states of India. He made the availability of educational infrastructure per lakh of population as the basis of his study and concluded that north-eastern states occupied the first three ranks, while Uttar Pradesh, Rajasthan and Tamil Nadu are at the bottom. He further emphasized that rural females, scheduled castes and scheduled tribes are lagging behind in educational attainment throughout the country.

Zaidi, A.N. (1986) explored the regional disparities in the educational development in India as well as in Uttar Pradesh in the paper “Educational Planning and Regional Disparities”. On the basis of certain indicators of educational development, he pointed out that there exist inter and intra-state inequalities in educational development in India.

Raza, M. and Aggarwal, Y.P. (1986) studied the inequalities in the levels of literacy in India and its relationship with the economic characteristics of population in their research paper entitled “Inequalities in the Levels of Literacy in India”. They identified the districts with varying degrees of inequalities in the distribution of literacy. The study also explained that the levels and inequalities in the distribution of literacy are strongly influenced by the processes of urbanization and industrialization. Mathur, B.B. (1988) in his study of the spatial pattern of literacy in Uttar Pradesh entitled “Rural Literacy in Uttar Pradesh: A Spatial Analysis”, has observed that the extent of rural literacy shows a wide disparity. He found that the north hilly region, Ganga-Yamuna doab and some parts of eastern plain show high rates of rural literacy whereas the larger parts of eastern plain and the southern plateaus show low literacy rates.

Debi, S. (1989) has made an attempt to measure the interdistrict inequalities in educational development in Odisha by the help of his study entitled “Inter-District Variations in Educational Development in Orissa”. On the basis of a literacy index and a cost-weighted composite index, he classified the districts as developed, average and backward. Analysis of the study reveals that districts with high urbanization levels are educationally more developed than those having less urbanization.

Tripathi, R.S. (1989) in his study of Manikpur Block (U.P.) named “Level of Literacy Among Kols of Manikpur Block (U.P.)”, explored the influence of urbanization on literacy among Kols. The study revealed that Manikpur town influenced the peripheral villages more than the villages situated in remote areas. The level of literacy among the Kols living in the villages situated near Manikpur town is higher than those living in the more distant villages.

Bhuiyan, R.H. and Banarjee, S. (1991) made a comparative study of educational and developmental disparities in Bangladesh in the paper named “Regional Disparities of Lower Level Educational Development of Bangladesh”. They



observed that regional disparity in education is directly related to developmental disparities of the region i.e. developed areas have high levels of education than the backward areas. The study further explored and concluded that urban locations and places with better connectivity have higher concentration of education.

“A Study of India’s Failing Education System”, this research paper written by Jain, M. (2020) focuses on how Indian Education system is heavily dependent on marks and learning rather than skill development and creating competency. In this study entitled “Students’ perception and preference for online education in India during COVID -19 pandemic” and written by Muthuprasad, T. et. al. (2020), research focus on understanding Agricultural Student’s perception and preference towards the online learning through an online survey of 307 students. The study also explored the student’s preferences for various attributes of online classes, which will be helpful to design effective online learning environment.

An article entitled “Children’s early foundational skills and education continuation in India: Heterogeneous analysis by caste, gender and location” written by Kumar D., Partap B., and Aggarwal A. (2023) examine how the early foundational skills (i.e., reading and math scores) is differently associated with the education continuation of SC/ST (i.e., Scheduled Castes/Tribes) and non-SC/ST children, and its variation by gender and location.

#### **4. Study Area**

Western Uttar Pradesh constitutes the north-western part of the state of Uttar Pradesh in northern India. The region forms an important segment of the fertile Ganga–Yamuna Doab and is characterized by high agricultural productivity, dense settlement patterns, and increasing urbanization. Geographically, the study area extends approximately between 27.5° N to 30.5° N latitude and 77.5° E to 79.5° E longitude.

The region comprises twenty-seven districts, including major districts such as Saharanpur, Muzaffarnagar, Meerut, Ghaziabad, Gautam Budh Nagar, Bulandshahr, Aligarh, Moradabad, Rampur, Badaun, Mainpuri, Etawah, and Auraiya. Many of these districts fall within or near the National Capital Region (NCR), which has accelerated economic development, industrialization, and urban expansion in the region.

Physiographically, Western Uttar Pradesh lies within the Upper Ganga Plain, characterized by flat topography, fertile alluvial soil, and an extensive network of rivers such as the Ganga, Yamuna, and their tributaries. These favourable natural conditions support intensive agriculture, particularly the cultivation of wheat, sugarcane, and rice. The region is also known for its developed irrigation system, which contributes to agricultural prosperity.

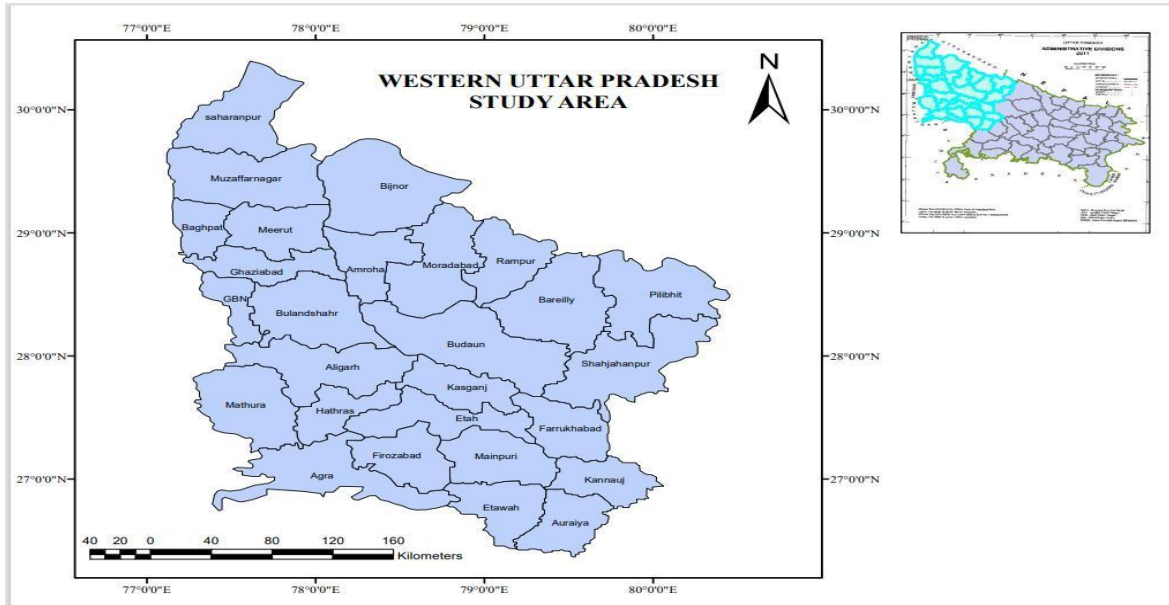
According to the Census of India (2011), the population density of the region is approximately 930 persons per square kilometre, indicating a high level of demographic concentration. The sex ratio is about 884 females per 1000 males, which is relatively lower than the national average. The overall literacy rate in Western Uttar Pradesh is approximately 67.47 percent, reflecting moderate educational development compared to other parts of the state.

The selection of Western Uttar Pradesh as the study area is significant because the region represents a unique combination of economic advancement and educational disparities. While districts such as Ghaziabad and Gautam Budh Nagar exhibit relatively high literacy levels due to industrialization, urbanization, and migration of educated populations, other districts such as Moradabad, Rampur, and Badaun continue to face challenges related to lower literacy levels, rural dominance, and socio-economic constraints.

Furthermore, the presence of numerous educational institutions, including schools, colleges, technical institutes, and universities, makes the region an important centre of educational activity in the state. Despite this institutional growth, spatial variations in literacy levels and educational facilities remain evident across districts.

Therefore, Western Uttar Pradesh provides an appropriate geographical setting to examine the spatial patterns of educational status and the determinants influencing educational development. The study of this region helps in understanding how educational facilities, socio-economic conditions, and regional characteristics interact to shape literacy patterns and educational outcomes.





**5. Objectives of the Study**

The present study aims to examine the spatial pattern of educational development and the factors influencing educational status in the western part of Uttar Pradesh. Education plays a significant role in socio-economic development, and therefore it is important to understand the regional variations in literacy levels and the availability of educational facilities.

The specific objectives of the study are as follows:

1. To determine the spatial patterns of level of education in the western part of Uttar Pradesh.
2. To find out the status of educational facilities in the study area.
3. To establish the linkages between level of education and educational facilities in the western part of Uttar Pradesh.

**6. Database and Methodology**

**6.1 Data Sources**

The present study is primarily based on secondary data collected from reliable and authentic sources. The data related to educational status and educational facilities were obtained from the following sources:

Census of India, 2011 – This source provided information regarding literacy indicators such as total literacy rate, male literacy rate, female literacy rate, rural literacy rate, urban literacy rate, and literacy gap across the districts of Western Uttar Pradesh.

Statistical Abstract of Uttar Pradesh (2020–21) – This publication provided information related to educational infrastructure and facilities including teacher–pupil ratio, number of educational institutions, enrolment ratios, and drop-out rates.

**6.2 Variables Selected for the Study**

To analyze the educational status and its determinants in the study area, the following variables were selected:

Categories	Variable	Definitions
Dependent Variables		



Education	Y <sub>1</sub>	Total literacy
	Y <sub>2</sub>	Male literacy
	Y <sub>3</sub>	Female literacy
	Y <sub>4</sub>	Literacy gap
	Y <sub>5</sub>	Rural literacy
	Y <sub>6</sub>	Urban literacy
Independent Variables		
Educational facilities	X <sub>1</sub>	Teacher-pupil ratio of Junior Basic Schools
	X <sub>2</sub>	Teacher-pupil ratio of Senior Basic Schools
	X <sub>3</sub>	Teacher-pupil ratio of Higher Secondary Schools
	X <sub>4</sub>	Teacher-pupil ratio of Degree colleges
	X <sub>5</sub>	Total Degree colleges
	X <sub>6</sub>	Junior Basic Schools per lakh population
	X <sub>7</sub>	Senior Basic Schools per lakh population
	X <sub>8</sub>	Higher Secondary Schools per lakh population
	X <sub>9</sub>	Enrolment ratio Of Junior Basic Schools
	X <sub>10</sub>	Enrolment ratio Of Senior Basic Schools
	X <sub>11</sub>	Drop-out rate of Junior Basic Schools
	X <sub>12</sub>	Drop-out rate of Senior Basic Schools
	X <sub>13</sub>	ITIs per lakh population
	X <sub>14</sub>	Polytechnics per lakh population
	X <sub>15</sub>	Total universities
	X <sub>16</sub>	Total Higher Secondary Schools
	X <sub>17</sub>	Total Senior Basic Schools
	X <sub>18</sub>	Total Junior Basic Schools



### 6.3 Techniques Applied

Various statistical and cartographic techniques were used to analyze the data and interpret the spatial patterns of educational development.

#### Percentage Method

The percentage method was used to calculate literacy rates and other educational indicators. This method helps in understanding the proportion of literate population and the distribution of educational facilities across districts.

#### Standard Score Additive Model (Z-Score Method)

The Standard Score Additive Model, commonly known as the Z-score method, was applied to analyze the spatial variation of educational status. This method standardizes the data by converting different variables into comparable scores. It helps in identifying districts with relatively high and low levels of educational development.

#### Karl Pearson's Correlation Coefficient (r)

Karl Pearson's correlation coefficient was used to examine the relationship between educational status variables and educational facilities variables. This statistical technique measures the degree and direction of association between two variables.

A positive correlation indicates that an increase in educational facilities leads to an increase in literacy levels, whereas a negative correlation indicates an inverse relationship.

#### Cartographic Techniques

To represent spatial patterns effectively, various cartographic techniques were used. Thematic maps were prepared using Geographic Information System (GIS) software such as ArcGIS (Version 10.5). Statistical analysis was conducted using SPSS (Version 20.0).

For better interpretation, the data were classified into five categories, which allowed the identification of districts with very high, high, moderate, low, and very low levels of educational development.

### 7. Spatial Pattern of Literacy in Western Uttar Pradesh

The spatial analysis of literacy provides an understanding of the regional variations in educational development across Western Uttar Pradesh. Literacy is one of the most important indicators of socio-economic progress and human development. In the present study, the spatial pattern of literacy has been analyzed through five indicators: total literacy rate, male literacy rate, female literacy rate, urban literacy rate, and rural literacy rate.

According to the Census of India (2011), the overall literacy rate in Western Uttar Pradesh is approximately 67.47 percent, which reflects a moderate level of educational development. However, the spatial distribution of literacy across districts shows considerable variation.

Table 1: Percentage of Literacy Rate by District wise in western Uttar Pradesh, 2011.

District	Total literacy rate	Male literacy rate	Female literacy rate	Literacy gap between male and female	Rural literacy rate	Urban literacy rate
Saharanpur	70.49	78.28	61.74	16.54	68.65	74.52
Baghpat	72.01	82.45	59.95	22.49	71.67	73.28
Ghaziabad	78.07	85.42	69.79	15.63	72.6	80.62
Gautam Buddha Nagar	80.12	88.06	70.82	17.24	74.77	83.73
Mathura	70.36	81.97	56.89	25.07	68.75	74.45
Agra	71.58	80.62	61.18	19.44	70.6	72.68
Firozabad	71.92	80.82	61.75	19.07	72.6	70.6
Etah	70.81	81.28	58.8	22.49	69.69	76.89



Mainpuri	75.99	84.53	66.3	18.23	75.37	79.35
Farrukhabad	69.04	77.4	59.44	17.96	67.76	73.37
Shahjahanpur	59.54	68.18	49.57	18.61	58.23	64.59
Pilibhit	61.47	71.7	50	21.7	60.72	64.95
Bareilly	58.49	67.5	48.3	19.2	55.89	63.05
Badaun	51.29	60.98	40.09	20.9	49.56	59.14
Kasganj	61.02	71.56	49	22.56	59.98	65.01
Hathras	71.59	82.38	59.23	23.14	71.52	71.85
Aligarh	67.52	77.97	55.68	22.3	67.34	67.85
Bulandshahr	68.88	80.93	55.57	25.36	68.71	69.39
Meerut	72.84	80.74	63.98	16.76	70.75	74.79
Muzaffarnagar	69.12	78.44	58.69	19.76	68.34	71.01
Bijnor	68.48	76.56	59.72	16.84	68.53	68.31
Moradabad	56.77	64.83	47.86	16.97	53.39	63.35
Rampur	53.34	61.4	44.44	16.96	52.41	56
Amroha	63.84	74.54	52.1	22.43	63.41	65.09
Etawah	78.41	86.06	69.61	16.45	77.3	81.99
Kannauj	72.7	80.91	63.33	17.58	73.05	71.03
Auraiya	78.95	86.11	70.61	15.5	77.54	85.7
Western region	67.47	76.55	57.2	19.34	65.53	71.58
Uttar Pradesh	67.68	77.28	57.18	20.1	65.46	75.14

Source: Census of India, 2011

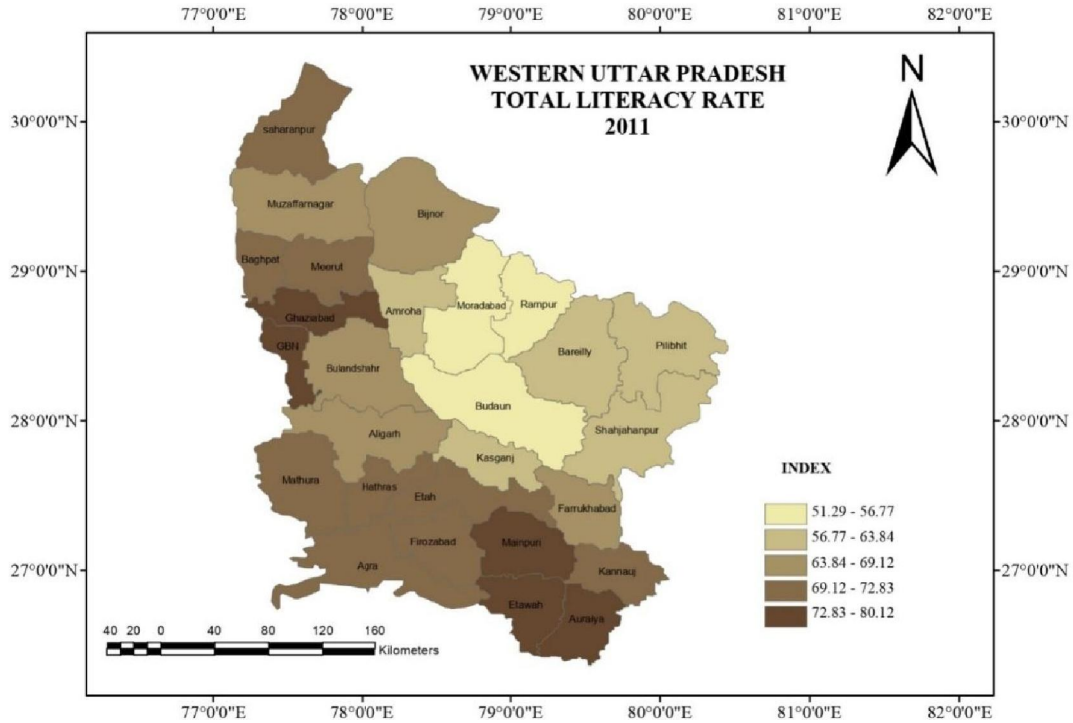
### 7.1 Distribution of Total Literacy Rate

The distribution of total literacy rate reveals clear regional disparities among the districts of Western Uttar Pradesh. Districts such as Ghaziabad, Gautam Budh Nagar, Mainpuri, Etawah, and Auraiya exhibit relatively higher literacy rates. These districts benefit from higher levels of urbanization, industrial development, and better access to educational institutions.

In contrast, districts such as Moradabad, Rampur, and Badaun record comparatively lower literacy rates. The lower literacy levels in these districts can be attributed to factors such as rural dominance, socio-economic backwardness, and limited educational infrastructure.

The spatial pattern indicates that districts located near the National Capital Region (NCR) generally show higher literacy levels due to improved educational opportunities, economic growth, and migration of educated populations.



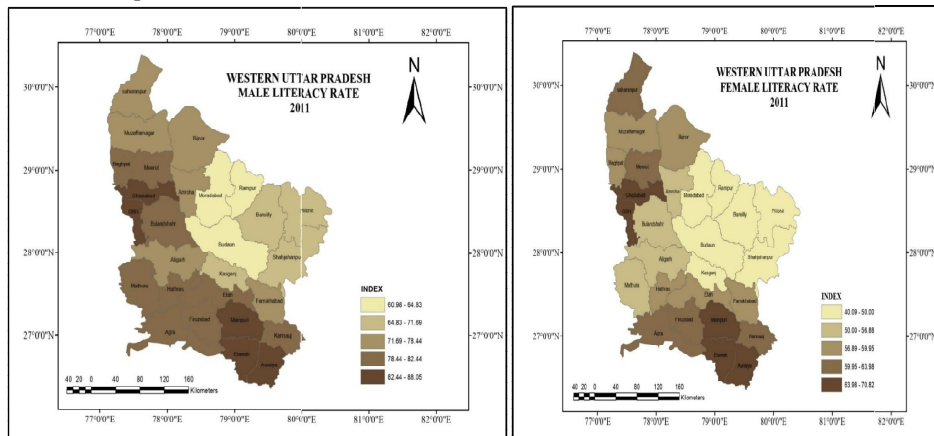


**7.2 Distribution of Male Literacy Rate**

The male literacy rate in Western Uttar Pradesh is relatively higher than the overall literacy rate. According to the 2011 Census, the male literacy rate is approximately 76.55 percent.

Districts with higher male literacy rates include Ghaziabad, Gautam Budh Nagar, and Aligarh, where access to educational institutions and employment opportunities is relatively better. These districts also benefit from urban influence and higher socio-economic development.

On the other hand, districts such as Rampur and Badaun show comparatively lower male literacy rates due to lower levels of economic development and limited educational awareness.



### 7.3 Distribution of Female Literacy Rate

The spatial pattern of female literacy reveals significant gender disparities in the region. The female literacy rate in Western Uttar Pradesh is about 57.2 percent, which is considerably lower than the male literacy rate.

Districts such as Ghaziabad, Gautam Budh Nagar, and Mainpuri exhibit relatively higher female literacy rates. These districts have better educational facilities, higher urbanization, and greater awareness regarding female education.

In contrast, districts like Moradabad, Rampur, and Badaun display lower female literacy rates. The lower level of female literacy in these districts is largely influenced by socio-cultural factors, economic constraints, and limited access to educational institutions for girls.

### 7.4 Urban Literacy Pattern

Urban areas in Western Uttar Pradesh generally show higher literacy rates compared to rural areas. The urban literacy rate in the region is approximately 71.58 percent.

Cities and towns offer better educational infrastructure including schools, colleges, libraries, and technical institutes. In addition, urban populations generally have higher awareness about the importance of education and better access to educational resources.

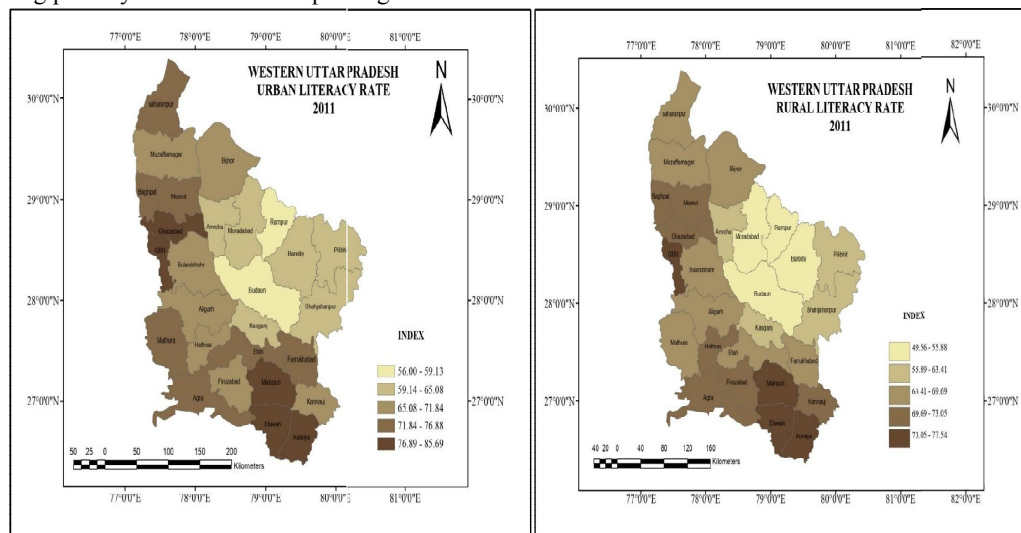
Districts with major urban centres such as Ghaziabad and Gautam Budh Nagar demonstrate particularly high levels of urban literacy.

### 7.5 Rural Literacy Pattern

The rural literacy rate in Western Uttar Pradesh is approximately 65.53 percent, which is lower than the urban literacy rate. This difference highlights the existing rural–urban disparity in educational development.

Rural areas often face challenges such as inadequate educational infrastructure, shortage of qualified teachers, and lower socio-economic conditions. These factors contribute to lower literacy levels in rural parts of the region.

Despite these challenges, some districts have shown improvement in rural literacy due to government initiatives aimed at expanding primary education and improving access to schools in rural areas.



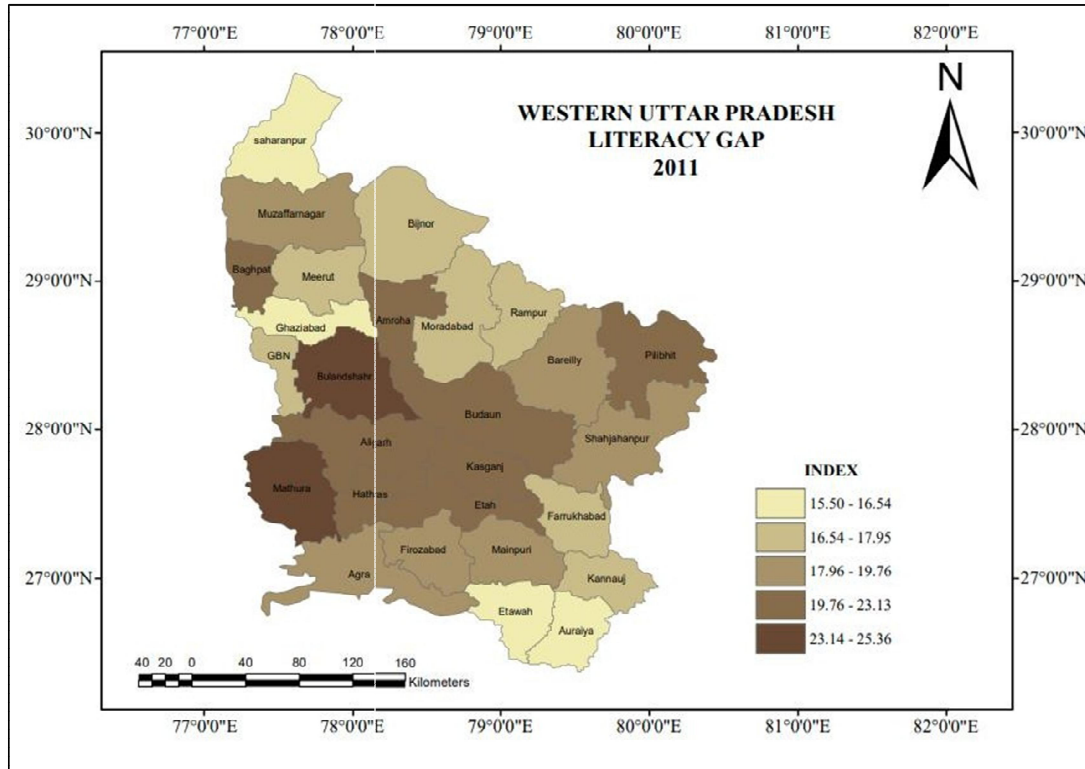
### 7.6 Literacy Gap

The literacy gap, particularly between male and female literacy, remains a major concern in Western Uttar Pradesh. The difference between male literacy (76.55 percent) and female literacy (57.2 percent) indicates a significant gender disparity.



Reducing this gap requires focused policy interventions aimed at promoting female education, improving school accessibility, and addressing socio-cultural barriers that restrict educational participation among girls.

Overall, the spatial pattern of literacy in Western Uttar Pradesh reveals that educational development is uneven across districts. Factors such as urbanization, economic development, educational infrastructure, and socio-cultural conditions play a crucial role in shaping literacy levels in the region.



**8. Determinants of Education**

The indicators considered are independent variables and the dependent variables which are used to show Karl Pearson’s correlation - total literacy rate, male literacy rate, female literacy rate, urban literacy rate, rural literacy rate and literacy gap.

In this section, an effort has been made to analyse the causal relationship between educational status and its facilities with the help of Karl Pearson’s correlation. Therefore, the statistical testing of simple association between total literacy (Y1) and each of the individual selected variables of educational facilities are shown in Table. XYZ. It shows that, total literacy is correlated with only one variable at 5 percent significance level. The variable namely, total junior basic schools (X18) is negatively correlated with total literacy.

Table 2: Result of Correlation(r) between Educational Status and Other Selected Variables of Educational Facilities in Uttar Pradesh, 2011.

Variables	Total lit	Male lit	Female lit	Literacy gap	Rural lit	Urban lit
X1	-0.563**	-0.559**	-0.554**	0.119	-0.601**	-0.485*
X2	-0.657**	-0.657**	-0.640**	0.108	-0.665**	-0.628**
X3	-0.254	-0.243	-0.252	0.082	-0.271	-0.212
X4	-0.507**	-0.534**	-0.454*	-0.101	-0.558**	-0.456*



X5	0.544**	-0.561**	0.512**	0.006	0.540	0.443*
X6	-0.011	0.006	-0.030	0.102	0.063	0.074
X7	0.123	0.130	0.113	0.018	0.181	0.193
X8	0.249	0.302	0.181	0.273	0.312	0.281
X9	0.307	0.275	0.335	-0.235	0.354	0.296
X10	0.567**	0.528**	0.593**	-0.307	0.534**	0.503**
X11	-0.372	-0.421*	-0.302	-0.237	-0.438*	-0.306
X12	-0.501**	-0.507**	-0.482*	0.047	-0.485*	-0.412*
X13	0.214	0.162	0.262	-0.321	0.207	0.293
X14	-0.030	0.041	-0.105	0.400*	0.057	-0.063
X15	0.227	0.181	0.268	-0.289	0.107	0.257
X16	0.061	0.101	0.017	0.214	0.116	-0.008
X17	-0.305	-0.344	-0.243	-0.203	-0.304	-0.339
X18	-0.466*	-0.487	-0.423*	-0.068	-0.423*	-0.454

Source: Based on Table. 1, 2,3,4,5, and 6 (See appendix)

\*\*Correlation is significant at the 0.01 level (2-tailed)

\*Correlation is significant at the 0.05 level (2-tailed)

Table. 2 also reveals that total literacy is correlated with six variables namely, teacher-pupil ratio of junior basic schools (X1), teacher-pupil ratio of senior basic schools (X2), teacher-pupil ratio of degree colleges (X4), total degree colleges (X5), enrolment ratio of senior basic schools (X10), and drop-out rate of senior basic schools (X12) at 1 percent significance level. Out of which two variables (X5, and X10) are positively correlated while rest of the four variables i.e., X1, X2, X4, and X12 are negatively correlated with total literacy (Y1). It may be concluded that the regional variation of total literacy is mainly caused by teacher-pupil ratio of junior basic schools, teacher-pupil ratio of senior basic schools, teacher-pupil ratio of degree colleges, total degree colleges, enrolment ratio of senior basic schools, and drop-out rate of senior basic schools.

In respect of male literacy rate, there are total seven variables i.e., X1, X2, X4, X5, X10, X11, and X12 which are correlated with male literacy. Out of the seven variables, only one variable namely, drop-out rate of junior basic schools (X11) is correlated at 5 percent significance level. The variable (X11) is negatively correlated with male literacy.

The other six variables i.e., X1, X2, X4, X5, X10, and X12 are correlated with male literacy at 1 percent significance level. Out of which one variable, enrolment ratio of senior basic schools (X10) is positively correlated while rest of the five variables i.e., X1, X2, X4, X5, and X12 are negatively correlated with male literacy. It may be concluded that the regional variation of male literacy is mainly caused by teacher-pupil ratio of junior basic schools, teacher-pupil ratio of senior basic schools, teacher-pupil ratio of degree colleges, total degree colleges, enrolment ratio of senior basic schools, drop-out rate of junior basic schools, drop-out rate of senior basic schools.

The table shows that, female literacy correlated with three variables namely, teacher-pupil ratio of degree colleges (X4), drop-out rate of senior basic schools (X12), and total junior basic schools (X18) at 5 percent significance level. All the variables are negatively correlated with female literacy.

Other four variable namely, teacher-pupil ratio of junior basic schools (X1), teacher-pupil ratio of senior basic schools (X2), total degree colleges (X5), and enrolment ratio of senior basic schools (X10) are at 1 percent significance level with female literacy. Out of which, two variables X5 and X10 are positively correlated while the other two variables X1 and X2 are negatively correlated with female literacy. It may be concluded that the regional variation of female literacy is mainly caused by teacher-pupil ratio of junior basic schools, teacher-pupil ratio of senior basic schools, teacher-pupil ratio of degree colleges, total degree colleges, enrolment ratio of senior basic schools, drop-out rate of senior basic schools, total junior basic schools.

Table. 2 shows that literacy gap is correlated with only one variable, polytechnics per lakh population (X14) at 5 percent significance level. The variable is positively correlated with literacy gap. There is no strong correlation of



literacy gap with any variable. It may be concluded that the regional variation of literacy gap is only caused by polytechnics per lakh population.

Rural literacy is correlated with three variables i.e., Drop-out rate of Junior Basic Schools (X11), Drop-out rate of Senior Basic Schools (X12), and Total Junior Basic Schools (X18) at 5 percent significance level which have shown in the table.5.1. All the three variables are inversely correlated with rural literacy.

There are four variables i.e., teacher-pupil ratio of junior basic schools (X1), teacher-pupil ratio of senior basic schools (X2), teacher-pupil ratio of degree colleges (X4), and enrolment ratio of senior basic schools (X10) which are also correlated with rural literacy at 1 percent significance level. Out of which, only one variable namely, enrolment ratio of senior basic schools (X10) is positively correlated with rural literacy while rest of the three variables X1, X2, and X4 are negatively correlated with rural literacy. It may be concluded that the regional variation of rural literacy is caused by teacher-pupil ratio of junior basic schools, teacher-pupil ratio of senior basic schools, teacher-pupil ratio of degree colleges, enrolment ratio of senior basic schools, drop-out rate of junior basic schools, drop-out rate of senior basic schools, and total junior basic schools.

Table. 2 shows that, urban literacy is correlated with the variables namely, teacher-pupil ratio of junior basic schools (X1), teacher-pupil ratio of degree colleges (X4), total degree colleges (X5), and drop-out rate of senior basic schools (X12) at 5 percent significance level. Out of which, one variable, total degree colleges (X5) is the variable which is positively correlated while the other three variables (X1), (X4), and (X12) are negatively correlated with urban literacy. The variables named, teacher-pupil ratio of senior basic schools (X2), and enrolment ratio of senior basic schools (X10) are correlated with urban literacy at 1 percent significance level. Out of which, one variable X10 is positively correlated while the other variable X2 is negatively correlated with urban literacy. It may be concluded that the regional variation of urban literacy is caused by teacher-pupil ratio of junior basic schools, teacher-pupil ratio of senior basic schools, teacher-pupil ratio of degree colleges, total degree colleges, enrolment ratio of senior basic schools, and drop-out rate of senior basic schools.

## 9. Conclusion

Education plays a major role in a nation's development and is a basic right of every human being. India is the 2nd largest populated country in the world has a literacy rate of around 74 percent. India's literacy rate continues to rise, however, there are many states in the country with low literacy rates. Since education is so essential for the development and growth of any country, in India, Kerala tops all states with the highest literacy rate of 94% following by Lakshadweep 91.85%, Mizoram 91.33%, and Goa with the literacy rate of 88.70%. On the other hand, Bihar has the lowest literacy rate of 61.80% followed by the states Arunachal Pradesh 65.38%, Rajasthan 66.11%, and Jharkhand with a literacy rate of 66.41%. Looking at these literacy rate statistics, it is clear that India has an even greater need for improvement in the education system.

Education is important for having awareness for almost everything in life and it is a basic right of every human being. The education system is very advanced in urban areas for people with good income sources but yet still needs to be improved for rural areas as well as for people who are below the poverty line. The Educational Development of these two sections of the country determines the country's growth. As the government already leads and initiated new programs to motivate people for education still many obstacles prevent these programs from being successful. Some of the issues are lack of awareness, poverty, poor infrastructure and facilities, resulting in a large number of people leaving or not going to schools.

In the present study, analysis of the selected indicators shows the level of education throughout western part of Uttar Pradesh, India. All the indicators of education shows regional disparities at district level which are compounded into overall disparity in education in the study area. The districts of high levels of education are less in number. Analysis of the data reveals that the districts of Mainpuri, Etawah, Auraiya, Ghaziabad, and Gautam Budh Nagar have very high literacy (according to Figure 4). Industrialisation in these districts is the major cause of very high literacy. It promotes the process of economic development and urbanization on the one hand and immigration of literate and educated



people on the other. The districts which have very high male literacy are Ghaziabad, Gautam Budh Nagar, Mainpuri, Etawah, and Auraiya (according to Figure 5). Very high levels of female literacy are found in the industrially advanced districts of Ghaziabad, Gautam Budh Nagar, Mainpuri, Etawah, and Auraiya (according to Figure 6). Very high levels of urban literacy is found in the districts of Ghaziabad, Gautam Budh Nagar, Mainpuri, Etawah, and Auraiya (according to Figure 7) while the districts comprise very high rural literacy are Gautam Budh Nagar, Mainpuri, Etawah, and Auraiya (according to Figure 8). Industrialisation, agricultural advancement, development of educational infrastructure and historical background are the major causes of high literacy in the above districts. Very low levels of literacy occur in a few districts which are adjacent to the areas of low level of literacy. The districts belonging to this category are Moradabad, Rampur, and Badaun. The low and very low level of literacy in these districts is due to economic backwardness and high percentage of rural population. Low participation of females in education in these areas also contributes in the low level of literacy.

The future of any country depends on its youth. Creating a good education and learning system and providing better opportunities to the youth will make them secure a good future for themselves and the country.

### **10. Suggestions**

Western Uttar Pradesh is gradually emerging as an important centre of education with the rapid growth of schools, colleges, and professional institutions. However, despite this expansion, several challenges remain in terms of quality education and employment opportunities. To improve the educational standards of the region, greater emphasis should be placed on merit-based admissions, quality teaching, and strict adherence to academic regulations. Strengthening institutional grading systems, improving faculty standards, and promoting job-oriented and skill-based courses can help align education with industry requirements. In addition, improving communication skills, particularly English proficiency, and enhancing students' professional competencies will help them compete effectively in national and international job markets.

Furthermore, the education system in Western Uttar Pradesh should focus on industry-institution collaboration to improve placement opportunities and practical training. Educational institutions must move beyond infrastructure development and invest more in student development, research, and innovation. Government support is also essential in improving infrastructure, electricity supply, and academic environments. Organizing educational fairs, seminars, and workshops and building a strong institutional reputation can help enhance the image of the region as a quality educational hub and ensure better opportunities for students in the future.

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