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Intra-District Disparities in Educational Facilities: A Case Study in Undivided Medinipur District, West Bengal, India

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Abstract:

Education is considered the most powerful social element for the betterment of the quality of life of people and also for the sustainable development of society and the growth of a country. United nation millennium development goals (MDGs), United nation sustainable development goals (SDGs), National education policy (NEP 1986, 1992, 2020) etc. all included education as a prerequisite for the betterment and balanced development of the nation. But in the Indian scenario, there have been observed inequalities among states, districts, blocks and even within village communities, which is a great concern for promoting national development. Keeping in mind the above facts, the present study has been focused on the spatio-temporal analysis of educational facilities among fifty-four blocks under the undivided Medinipur district, West Bengal, for the two census years 2001 and 2011 respectively. The study tried to compute inequalities in educational facilities using a composite educational index on the basis of twelve selected indicators, following Deprivation index method. The study found that western blocks are very deprived in comparing to eastern blocks regarding educational facilities for the year 2001, whereas, in 2011 western blocks improved a little but eastern blocks shows inadequacy in the available educational infrastructure in comparing to the rapid population growth in the same period of time. The study argued for necessary government policy by local institutions for improvement of the educational facilities of deprived pockets within the district.

***Key Words**:* Education Index, Deprivation Index Method, Spatio-temporal disparities, Educational facilities.

1. Introduction:

Education is considered as one of the important element of human development which is prerequisite for the betterment of quality of life of people at any region. According to the Dube (2015), improving access to educational attainment is the fundamental achievement of poverty reduction and fulfilling millennium development goals. As per The United Nation Millennium Development Goals (MDGs), "Education is one of the most powerful and proven vehicles for sustainable development". In United Nations Human Development Index, education is considered as one of the three pillars to assess the condition of livelihood of people (UNDP, 1990). The United Nation Millennium Development Goals (MDGs) included Achievement of Universal Primary Education under goal 2 as one of its eight agenda. It focuses on the equal access to affordable primary, secondary and vocational training; eliminate gender and wealth disparities and achieving universal access to quality of higher education. Similarly, the Sustainable Development Goals (SDGs) also included Quality Education as Goal 4, among its seventeen agenda. The National Education Policy (1986) emphasis on the removal of disparities in education, and also on the equal educational opportunities by fulfilling specific needs of deprived people. It also focuses on women's equality in respect to education. According to National Education Policy 2020 (NEP 2020), education is a fundamental right of people for achieving human potential, developing an equitable society and for promoting the national

development. It highlights on the development of the creative potential of each individual population. According to NEP 2020, "education must develop not only cognitive capacities - both the 'foundational capacities 'of literacy and numeracy and 'higher-order' cognitive capacities". Educational attainment determines the economic growth of a country in one way, whereas, educational level itself also improved by the level of economic growth (Kumari and Raman, 2011).

In India, inequalities in respect to educational attainment are very common among different blocks, districts or region of majority of states like,- Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh etc. (Kumari and Raman, 2011). These disparities have developed several socio-economic issues like,- income inequality, gender issues, formation of economic class, crisis in social identity, health related issues etc. (Hamid et el., 2013). As a coping mechanism, several planning on education have been implemented in India to reduce regional inequalities by achieving equality of education across gender, caste and community (Tilak, 2006). But in spite of that there still present considerable disparities. Regarding the factors responsible for these educational deprivations and its spatial disparity, notable factors like economic, social, cultural, institutional factors etc. are responsible in a considerable manner (Maji & Sarkar, 2017). According to Maji and Sarkar (2017) level of educational development depends on the enrolment ratio, people-teacher ratio, space-student ratio, dropout and repetition ratio, local habitat, Water and sanitation infrastructure in the school etc.

There are considerable numbers of literature that have been devoted for the mapping of inequalities in educational provision and examining the factors for differential level of educational attainment across developed and developing countries. The study of Atuahene and Owusu-Ansah (2013) examined the access of higher education, participation, equity and disparity in education in Ghana. The study argued that in spite of development in education, there exist spatial inequalities in education with respect to unequal participation by women, minorities or individuals from the socially backward communities. The study of Dube (2015) found that in Sub-Saharan Africa gender disparity in educational enrolment and attainment is very common due to socio-cultural and economic causes, cultural beliefs and attitudes etc. The study of Hamid, Akram and Shafiq (2013) found significant inequalities in educational attainment within inter and intra province of Pakistan. The authors argued that these educational disparities are responsible for widening gap between haves and have-nots in the country. The study of Afzal et al. (2013) presented strong gender disparities in educational attainment in the rural areas of Punjab province of Pakistan.

In India there are numbers of study regarding educational inequalities. The study of Tabassum (2016) argued that primary education is the foundation of educational status of a nation. In his study he examined inter-district primary educational facilities in the most populous and educationally backward state of Uttar Pradesh. Another study by Kumari and Raman (2011) examined inter-district disparity in educational attainment of the state of Uttar Pradesh based on 13 indicators for the year 1990-91 and 2007-08. The study computed composite indices using education indicators and categorised all the districts based on their performances. The study of Debapriya & Mohanty (2008) attempted to identify inter-district development disparity in respect to health and education in Odisha state based on Principal Component Index. Diwakar (2009) identified intra-regional disparities, inequality and deprivation among poor household with in the state of Uttar Pradesh and also argued that region-specific or district-level planning needs for improvement of the deprived population. In their study, Naik and Sharada (2013) found inter-district educational disparity in karnataka by computing educational development index, based on principal component analysis using 15 education parameters. The study suggested that educational infrastructure should be improved by appropriate policy implementation to reduce inequalities in educational sector. The study of Agarwal (2014) examined the educational attainment rate and educational inequality in rural and urban India for the years 1993, 1999, 2004 and 2009, by computing the education Gini Index using the secondary data of NSSO 50th, 55th, 61st and 66th round. The study found marked inequality and regional contrast in educational attainments between the rural and urban populations in India. Moreover, the study observed that rural area shows an inter-group inequality in education, for which government should give more attention for improving the educational facilities in rural area. The study of Ghosh (2011) evaluated the relative progress and performance in elementary education and gender disparities in educational attainment among fifteen major state of India for the time periods of 1981, 1991 and 2001. The study found that India shows a decreasing trend in literacy rate, though there have been seen wide inter-state variations. The study also observed that the literacy rate is uneven between rural and urban areas too. The study concluded that in spite of significant improvement in education in respect to rural-urban, inter-state and gender disparity, inequalities have been persisting in India due to unsatisfactory achievement in quality education and

quantitative expansion. The study suggested that state and central government should take necessary efforts to improve women's education, reduction the gender gap in education, and better governance and service delivery system for proper implementation of different schemes (Ghosh, 2011). The study of Rasool et al. (2016) found district level educational disparity in terms of literacy level, infrastructure, opportunities to basic education (from primary to higher secondary), facilities for professional courses and training specialization by applying Kendall's Rank Order method in different districts under Jammu and Kashmir. The study classified districts into three different development categories.

There are number of studies in the state of West Bengal regarding inequality in educational status. The study of Banu and Rawal (2015) explored inter-district educational inequality in the state of West Bengal, by calculating factor analysis using 17 selected variables. The study argued that this disparity is due to historical, economic, socio-cultural, physical (like soil fertility), nearness of urban centres (nearness to Kolkata), insufficient government policies etc. The study found that educational attainment is low to very low at middle and western region, medium level at northern region and high level at southern region of the state of West Bengal. The study asks for awareness generation among local people and implementation of government policies in the deprived region for balanced regional development. The study of Das (2020) analysed inter-block educational status and development in Jalpaiguri district by calculating composite index with the help of 27 selected indicators, based on principal component analysis. The study measured disparities using coefficient of variation and also tried to find out the most backward blocks by ranking them based on composite index score. It argued that improvement in women education, awareness among local people, reduction in child labour and government initiative can improve the balanced development of that region. In their study, Hoque and Hashmi (2020) found inter-block disparities in the level of educational development in Uttar Dinajpur district of West Bengal, by computing 11 selected indicators using Composite mean Z-score method. The study tried to find out the factors responsible for those inequalities. The study also recommended for government attention and creating awareness generation for balancing the developmental scenario. The study of Maji and Sarkar (2017) examined intra-district level of disparities and development in primary education in Bankura district, by calculating Location Quotient (L.Q.), Z score and correlation coefficient using 10 selected educational indicators based on census data 2011. Though inter-block educational disparity is common in the study area, the study found that western region of the district faces backwardness due to economic barrier and physical disadvantage, whereas eastern part of the district shows relatively better condition in respect to development in education. Ghatak (2012) explored inter-block disparity in the level of educational development in Burdwan district of West Bengal by computing composite Z score and composite rank Index. The study argued that western blocks are much deprived than eastern blocks. The study suggested policy implementation for betterment of educational infrastructure facilities, better implementation of SSM activities, awareness generation, introducing new courses and more budget allocation for improvement of infrastructure etc.

In considering the above mentioned scenario, the present-work is focused on the inter-block disparity in educational facilities in Undivided Medinipur district of the state of West Bengal, for two census years 2001 and 2011. The study also tried to identify the most vulnerable blocks regarding educational facilities for which special attention is needed. The study also suggested possible policy implementation for the improvement of health facilities at the underdeveloped and deprived region for the balanced development of the population.

***Objectives of the Study*:**

The main objectives of the study are as follows:

a) To examine the inter-block disparities in educational facilities for two temporal scale i.e. 2001 and 2011.
b) To identify the backward blocks for which special planning is needed by government initiative.

2. Material and methods:

2.1. Study area:

The study includes Undivided Medinipur district which was one of the largest districts of West Bengal, before partitioned in the year 2002 and 2017 respectively. Now the study area has been divided into Purba Medinipur, Paschim Medinipur and Jhargram districts to facilitate suitable administration and for the better functioning of development initiatives. The study area is located between 21°36'35"N - 22°57'10"N latitude and between 86°35'50"E - 88°12'40"E longitude (Census, 2001). The eight block of western part is included in Jhargram district which is topographically a fringe of the Chotonagpur Plateau and consists of a hard laterite zone. The eastern region comprises of twenty-five blocks formed Purba Medinipur district, which is developed by alluvial deposits, borne by the river Hooghly and its tributaries, and coastal influences. The middle portion including twenty-one blocks formed Paschim Medinipur district which have undulated topography at its western part and rolling plain topography at its east region. The study incorporates three newly formed districts including fifty-four blocks as Undivided Medinipur district. The detail of the study area has shown in figure 1.

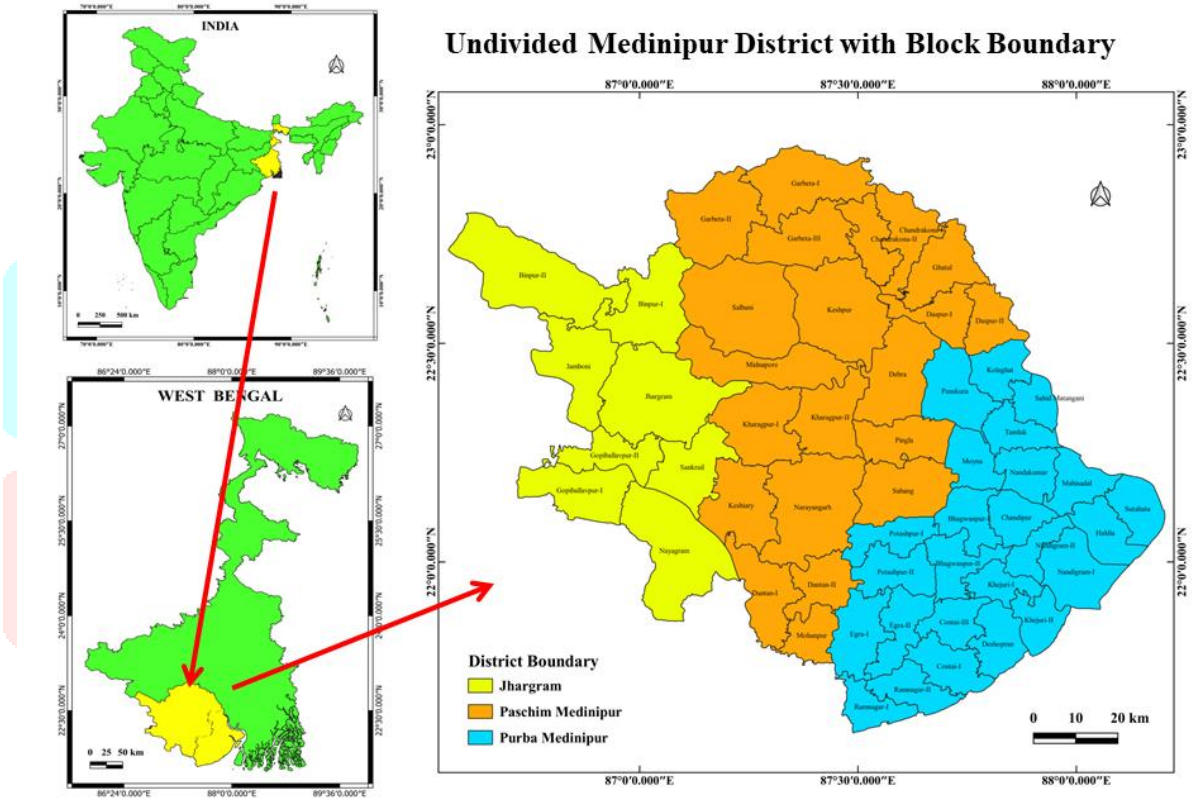

Figure 1: Location map of the study area including three newly formed districts with block boundary

2.2. Data Source:

The study has been done primarily based on secondary sources from census data and statistical handbook. The data for the year 2001 has been collected from District Census Handbook, Midnapore district (2001) and District Statistical Hand Book, Medinipur district (2001). For the year 2011, data has been collected from District Census Handbook, Paschim Medinipur district (2011), District Census Handbook, Purba Medinipur district (2011), District Statistical Hand Book, Paschim Medinipur district (2010 & 2011 Combined), District Statistical Hand Book, Purba Medinipur district (2010 & 2011 Combined).

2.3. Selection of indicators:

For the present study, twelve indicators have been selected based on the availability and accessibility of the relevant data. The study includes variables like,- literacy rate, school education infrastructure, non-formal and mass literacy infrastructure. The selected variables with their coefficient of variation (CV) values have been summarized in Table 1.

Table 1: Selected Indicators, their relation with development and calculated CV for 2001 & 2011

Variable ID	Variable Explanation	Relationship with Development	**CV (2001)**	**CV (2011)**
X1	Percentage of village having Educational facilities	Positive	**23.48**	**15.11**
X2	Percentage of Male literacy	Positive	**7.33**	**6.39**
X3	Percentage of Female literacy	Positive	**14.79**	**11.36**
X4	Gap in Male-Female literacy	**Negative**	**16.77**	**23.67**
X5	Number of Primary School (Per 10,000 Population)	Positive	**28.06**	**26.40**
X6	Number of Primary School (Per 100 Sq. Km.)	Positive	**38.36**	**36.13**
X7	Pupil-Teacher ratio at primary School	**Negative**	**61.72**	**26.49**
X8	Number of High School (Per 10,000 Population)	Positive	**22.30**	**21.73**
X9	Number of High School (Per 100 Sq. Km.)	Positive	**49.48**	**53.80**
X10	Pupil-Teacher ratio at High School	**Negative**	**14.84**	**17.11**
X11	Number of Special & Non-formal Education Institutions (Per 10,000 Population)	Positive	**52.64**	**31.01**
X12	Numbers of Mass Literacy Centre (Per 10,000 Population)	Positive	**89.84**	**31.84**

2.4.Choice of methods of Analysis:

Numbers of researcher considered different methodologies to understand the level of development in any region. In methodological concern, the researcher like,- Naik and Sharada, 2013; Kumari & Raman, 2011; Kumari 2014 utilized Principal Compondnt Analysis (PCA) to formulate composite indices. The study of Rasool et al. (2016) used Kendall's rank order score method. Das (2020), Ghatak (2012) and Hoque and Hashmi (2020) used Z score method. Bishnoi and Aneja (2008) used Deprivation Index Method to compute composite indices.

The present study is based on Deprivation Index Method, following the same methodology used in formulation of UNDP's Human Development Index (UNDP 1990). For that purpose all twelve indicators have been standardised and given equal weightage. The calculated composite index values in respect to each block have been ranked from best to worst order. For categorisation of blocks all the fifty-four blocks have been classified into five categories i. e. Very low, Low, Moderate, High and Very high based on calculated index values. The lowest value of the calculated index is termed as very low level of development and vice versa. The details methodology involved in the study has been described below (Figure 2):

- Identification and selection of twelve variables under educatioal facility

- Standardized the selected indicators following the methodology used in UNDP's Human Development Index (HDI)

- The equation are:
- **Sji** $= (x_{ij} - x_{min}i) / (x_{max}i - x_{min}i)$ *(for Positive relationship)* …….. *(1)*

- **Sji** $= (x_{max}i - x_{ij}) / (x_{max}i - x_{min}i)$ *(for Negative relationship)* …….. *(2)*

- Where, **Sji** denotes the standardized score of ith variable at jth unit of study. x_{max}**i** *and* x_{min}**i** represent the maximum and minimum values of ith variable in the study area respectively. **xij** represents the actual value of ith variable at jth units of study.

- Aggregation of standardized score (Sji) to get Average Deprivation Index (ADIj) of each individual block using the following equation.

- ADIj = ΣSji / n ..... *(3)*
- Where, A**DIj** denotes the Average Deprivation Index of jth units of study.)

- Calculation of Education Index (EIj) using the following equation.

- EIj = (1- ADIj) ..... *(4)*
- (Where, **EIj** denotes the Education Index at jth units of study)

Figure 2: Methodological steps of computed Education Index

The block with highest calculated index value has been considered as the block with very high educational facility, whereas lowest value indicates very low educational facilities.

Co-efficient of Variation (CV):

To measure the degree of variation between the selected indicators, coefficient of variation (CV) has been calculated for the years 2001 and 2011. The calculated CV values Zero or nearer to zero implies that there is no disparity or perfect equality in the series of observation. But, higher the calculated value of coefficient of variation indicates that greater degree of variation existed among different blocks regarding the specific selected indictor. The following formula is used to calculate the CV:

CV = (Standard Deviation / Mean) × 100

Correlation analysis:

To show the relationships among various indicators incorporated in the study, Pearson Correlation Coefficient has been calculated based on the following equation:

$$r = \frac{N\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{[N\Sigma x^2 - (\Sigma x)^2][N\Sigma y^2 - (\Sigma y)^2]}}$$

Where, r = Pearson correlation coefficient; N = the number of pairs of scores; Σxy = the sum of the products of paired scores; Σx = the sum of x scores; Σy = the sum of y scores; Σx^2 = the sum of squared x scores; Σy^2 = sum of squared y scores respectively.

3. Result and Discussion:

3.1. Selected indicators and their relative disparity:

Selection of indicators and their comparative level of disparity among different blocks show a clear picture about the inter-block inequality. The higher calculated coefficient of variation (CV) values (in table 1) of individual indicators reveals that there present high level of inter-block inequality in respect to individual parameter. The figure 3 represents the value of CV of selected twelve indicators for the years 2001 and 2011, which reveals that the indicators like,- Pupil-Teacher ratio at primary (X7), Number of High School per 100 Sq. Km. (X9), Number of Special & Non-formal Education Institutions per 10,000 Population (X11) and Numbers of Mass Literacy Centre per 10,000 Population (X12) have seen greater inter-block disparity in both the years. The values of indicator X2, X3, X7, X11 and X12 shows decreasing level of disparity from the year 2001 to 2011. The indicator X9 i.e. Number of High School per 100 Sq. Km. shows increasing trend of disparity. In consideration of educational facilities X1, X2, X3, X4 and X10 shows less inequality among fifty-four blocks in comparison to other indicators (Figure 3). Therefore it is clear that the study area have remarkable inequalities in respect to the availability of selected educational facilities.

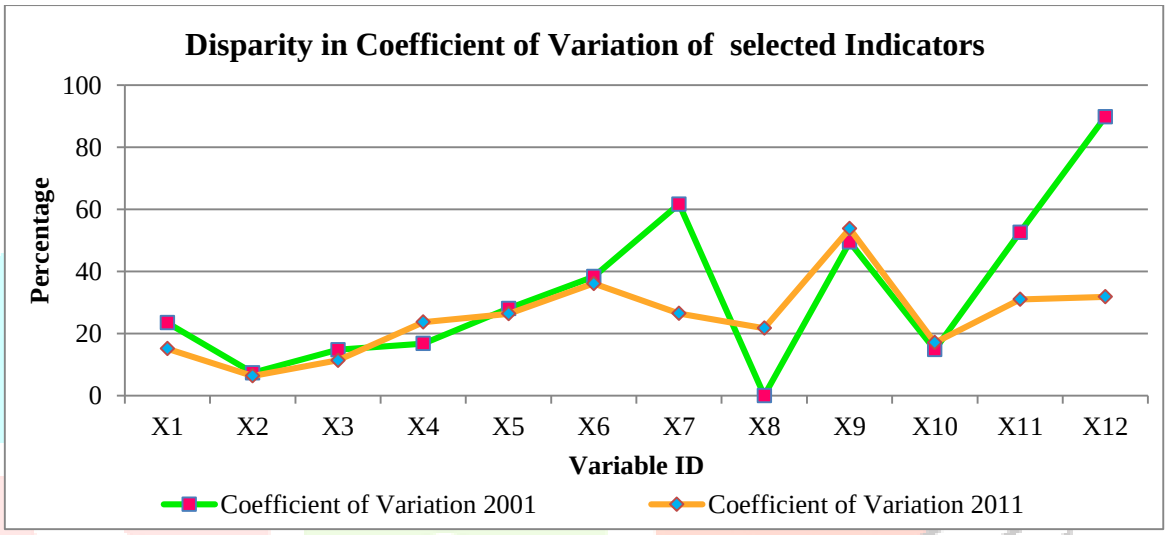

Figure 3: Level and pattern of disparity in coefficient of variation for the year 2001&2011

3.2. Level of educational facilities:

For understanding block-wise levels of educational facilities education index (EI) have been calculated for the entire fifty-four blocks for the years 2001 and 2011. All the values have been tabulated (in Table 2) and ranked in descending order and identified their level of educational development for the years 2001 and 2011, to explore their relative level of development and understand their temporal changes. The rank 1 represents a block having very high level of educational facilities, whereas rank 54 represents the block having very low level of educational facilities. The study also analysed whether their rank changed or not from 2001 to 2011 and if changed then whether the blocks improved or deteriorated their level of education during the temporal scale.

For the year 2001, the highest index value (0.70) was seen in the block Khejuri-I and hence ranked as 1, whereas, the Binpur-I block shows the lowest value (0.29) of the education index and hence ranked as 54 which indicates worst level of development regarding educational facilities. In the year 2011, the ranked 1 block (Khajuri-I, 0.67) remain the same, whereas Midnapore (0.28) block shows 54 rank indicating very less availability of educational facilities with respect to increasing population pressure within the block (Table 2). The table 2 shows details regarding the entire fifty-four blocks under the study area which clearly indicates a wide range of inter-block disparity regarding the level of educational facilities.

Table 2: Block-wise computed score of EI, Rank & Level of Development

		2001			2011		
Sl	C D Block	EI	Rank	Level	EI	Rank	Level
1	Jhargram	0.42	40	L	0.41	42	L
2	Binpur-I	0.29	54	V L	0.30	52	V L
3	Binpur-II	0.38	44	V L	0.42	41	L
4	Jamboni	0.36	46	V L	0.36	48	L
5	Nayagram	0.43	38	M	0.38	45	L
6	Sankrail	0.44	37	M	0.47	33	M
7	Gopiballavpur-I	0.33	50	V L	0.36	46	L
8	Gopiballavpur-II	0.49	29	H	0.48	28	M
9	Salbani	0.34	47	V L	0.36	47	L
10	Keshpur	0.37	45	V L	0.44	39	M
11	Garbeta-I	0.34	48	V L	0.34	50	L
12	Garbeta-II	0.39	43	L	0.46	35	M
13	Garbeta-III	0.33	51	V L	0.40	44	L
14	Midnapore	0.29	53	V L	0.28	54	V L
15	Debra	0.44	36	M	0.48	29	M
16	Pingla	0.51	25	H	0.51	23	M
17	Keshiary	0.30	52	V L	0.43	40	L
18	Dantan-I	0.34	49	V L	0.36	49	L
19	Dantan-II	0.43	39	L	0.45	37	M
20	Narayangarh	0.41	42	L	0.45	38	M
21	Mohanpur	0.48	32	H	0.48	32	M
22	Sabang	0.54	19	V H	0.57	10	H
23	Kharagpur-I	0.41	41	L	0.29	53	V L
24	Kharagpur-II	0.44	35	M	0.32	51	V L
25	Chandrakona-I	0.60	8	V H	0.53	18	H
26	Chandrakona-II	0.50	27	H	0.52	21	M
27	Ghatal	0.52	21	V H	0.55	15	H
28	Daspur-I	0.49	28	H	0.52	20	M
29	Daspur-II	0.59	10	V H	0.55	14	H
30	Tamluk	0.60	7	V H	0.62	4	V H
31	Sahid Matangini	0.57	13	V H	0.54	17	H
32	Panskura	0.51	24	H	0.53	19	H
33	Kolaghat	0.50	26	H	0.49	26	M
34	Moyna	0.56	16	V H	0.55	16	H
35	Nandakumar	0.56	15	V H	0.49	27	M
36	Chandipur	0.59	9	V H	0.58	7	H
37	Mahisadal	0.57	14	V H	0.56	13	H
38	Nandigram-I	0.49	30	H	0.48	30	M
39	Nandigram-II	0.66	3	V H	0.61	5	H
40	Sutahata	0.64	5	V H	0.64	2	V H
41	Haldia	0.59	11	V H	0.56	11	H
42	Potashpur-I	0.60	6	V H	0.57	9	H
43	Potashpur-II	0.52	23	H	0.50	25	M
44	Bhagwanpur-I	0.55	17	V H	0.51	24	M
45	Egra-I	0.45	34	M	0.40	43	L
46	Egra-II	0.48	31	H	0.45	36	M
47	Khejuri-I	0.70	1	V H	0.67	1	V H
48	Khejuri-II	0.46	33	M	0.46	34	M
49	Bhagwanpur-II	0.64	4	V H	0.62	3	V H
50	Ramnagar-I	0.53	20	V H	0.51	22	M
51	Ramnagar-II	0.52	22	H	0.56	12	H
52	Contai-I	0.67	2	V H	0.58	8	H
53	Deshopran	0.54	18	V H	0.48	31	M
54	Contai-III	0.58	12	V H	0.59	6	H
VH=Very High, **H**=High, **M**=Medium, **L**=Low and **VL**=Very Low							

Source: Calculated by the author

3.3. Temporal pattern of educational facilities:

The observation on block-wise temporal change shows a clear assessment to say which blocks improve and deteriorates from the year 2001 to 2011. It has been observed in figure 4 that the numbers of blocks under divided Jhargram and Paschim Medinipur district show relative improvements, whereas maximum blocks under Purba Medinipur district shows relatively inadequate level of availability of their educational facility in comparison to their growing population pressure. The level of education of different blocks like,- Jhargram, Binpur-I, Binpur-II, Jamboni, Keshpur, Debra, and Narayangarh improved in a considerable manner. On the other side, the availability of educational facilities is not enough under different blocks like,- Chandrakona-II, Ghatal, Daspur-I, Daspur-II, Tamluk, Sahid Matangani, Panskura, Kolaghat, Moyna, Nandigram-I, Nandigram-II, Sutahata, Haldia, Potashpur-I in comparison to growing population pressure. The study shows that the blocks having serial number 1 to 20 represents less index values and hence represents less educational facilities, whereas, blocks with serial number 26 to 41 and 47 shows relatively high level of educational facilities. These scenarios authenticate the inequality among blocks regarding level of educational facility.

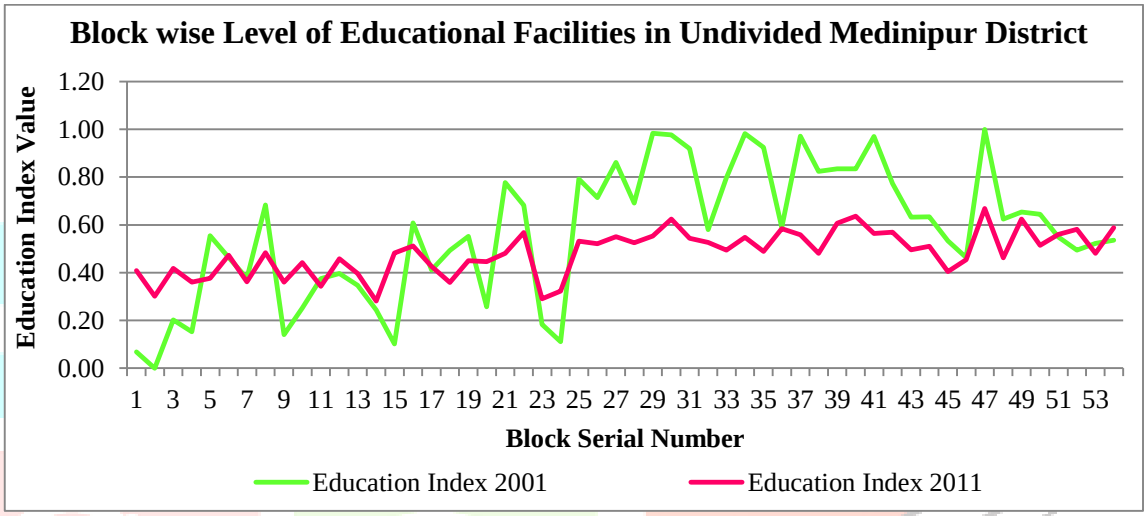

Figure 4: Temporal pattern of level of educational facility in 2001 & 2011. (Source: Prepared by the author)

3.4. Spatial pattern of educational facilities:

The spatial mapping represents a clear picture of the relative position of each and every block in different development strata. The table 3 shows that 21 blocks represented very high level of educational facilities in 2001 which reduced to 4 in the year 2011. With respect to high level of educational facilities, the number of blocks increased from 11 to 15 from the year 2001 to 2011. The blocks under the level of medium and low educational facilities increased from 6 to 20 and 5 to 11 respectively for the same period of time. In consideration of the very low level of categories, the number of blocks was reduced from 11 to 4 for the same temporal scale. The study reveals that maximum blocks represented high to very high levels of education facilities in the year 2001 which shifted to medium to high categories in the year 2011.

Table 3: Number of Blocks in different Level of Educational Facilities

Level of Educational Facilities		2001	2011
> (Mean + 1.5 Standard Deviation)	Very High (VH)	21	4
(Mean + 0.5 SD) - (Mean + 1.5 SD)	High (H)	11	15
(Mean - 0.5 SD) - (Mean + 0.5 SD)	Medium (M)	6	20
(Mean - 1.5 SD) - (Mean - 0.5 SD)	Low (L)	5	11
< (Mean - 1.5 Standard Deviation)	Very Low (VL)	11	4

Source**:** Prepared by the author

The spatial map (Figure 5) of the year 2001 shows that the maximum blocks at the eastern boundary show a very high level of educational facilities, whereas the middle and western blocks under the study area show relatively very low levels of educational facilities in the same period. The southern blocks show relatively high to medium levels of educational facilities. In contrary, few Northern blocks show low levels of available educational facilities. The figure 6 shows the relatively improved condition of underdeveloped blocks and depicts little improvement in the educational level of western and central blocks in the year 2011. The study identified a remarkable insight that the educational facilities of eastern blocks were reduced in a considerable manner in the year 2011. The overall observation of the inter-block level of educational facilities shows a wide level of disparity in the study area. The table 4 highlighted the top 5 and worst 5 blocks having high level of educational facility and low level of educational facility respectively for the years 2001 and 2011.

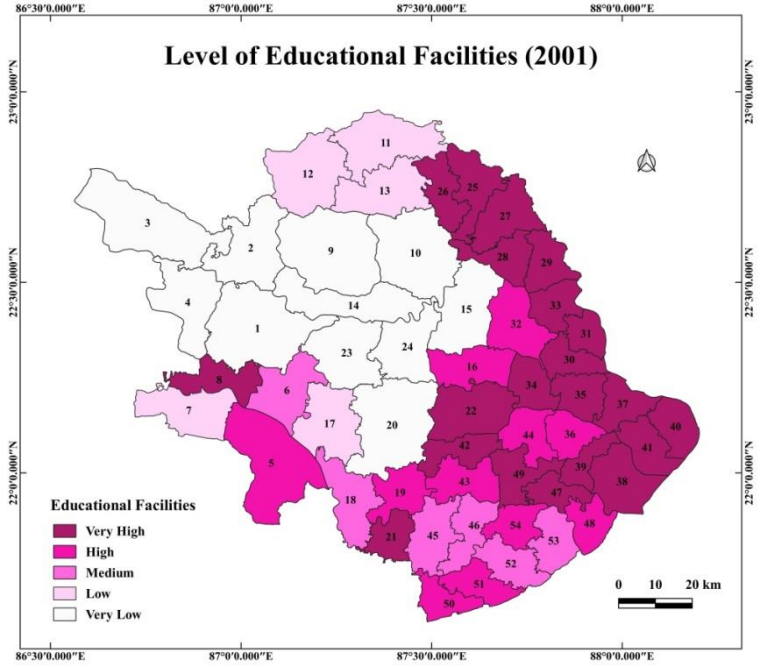

Figure 5: Inter-block spatial pattern of level of Educational facility in 2001 (Source: Prepared by the author)

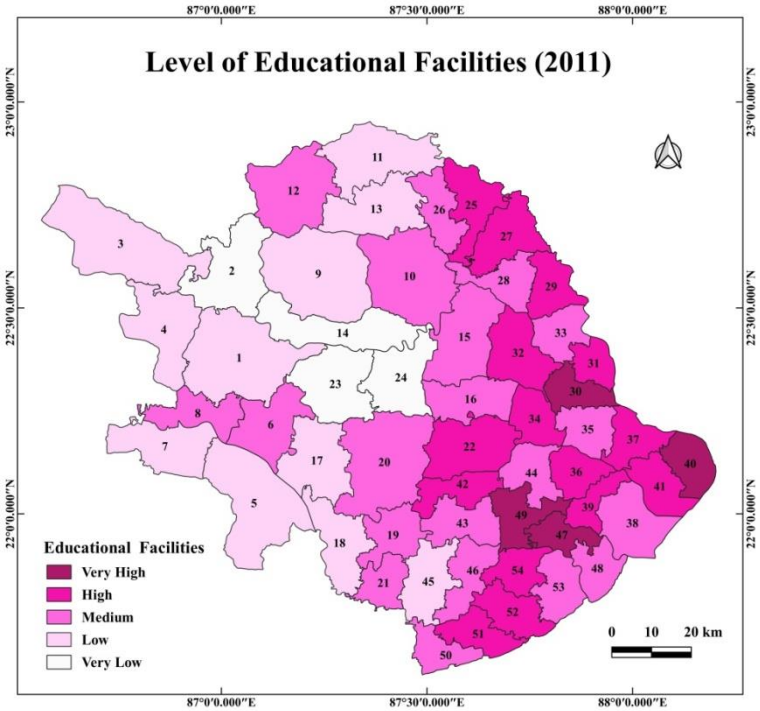

Figure 6: Inter-block spatial pattern of level of Educational facility in 2011 (Source: Prepared by the author)

Table 4: Best and worst blocks in respect to Educational facilities

Top 5 blocks in **high level** of Educational Facilities		Top 5 blocks in **Low level** of Educational Facilities	
2001	2011	2001	2011
Khejuri-I	Khejuri-I	Binpur-I,	Midnapore
Contai-I	Sutahata	Midnapore	Kharagpur-I
Nandigram-II	Bhagwanpur-II	Keshiary	Binpur-II
Bhagwanpur-II	Tamluk	Garbeta-III	Kharagpur-II
Sutahata	Nandigram-II	Gopiballavpur-I	Garbeta-I

3.5. Relative share of Area and Population under different levels of educational facilities:

Identification of the share of blocks, their percentage of area and population in different levels of development have been considered very necessary for proper policy implementation and planning process by the local government or state and central government. The study found that the maximum percentage of blocks, including the maximum percentage of area and population have been fell in very high to high categories for the year 2001 which shifted to high and medium level development categories in the year 2011. Though the share of blocks, area and population in the very low level of categories reduced from the year 2001 to 2011, their relative share increased in the low level of categories for the same period. It is very viable that the percentage share in very high categories has been reduced a lot from the year 2001 to 2011. Therefore, urgent policy implementation is needed by the local government for area-specific improvement of educational facilities. In addition, more vulnerable blocks need specific planning for upgradation of their educational facilities.

Table 5: Number of Blocks, Area & Population in different Level of Educational Facilities

Level of Health Facilities	**2001**	**2011**
Percentage of Blocks included in different Level of Educational Facilities		
Very High	38.89	7.41
High	20.37	27.78
Medium	11.11	37.04
Low	9.26	20.37
Very Low	20.37	7.41
Percentage of Area included in different Level of Educational Facilities		
Very High	23.00	3.57
High	14.13	17.54
Medium	12.23	32.27
Low	13.54	29.60
Very Low	29.25	8.95
Percentage of Population included in different Level of Educational Facilities		
Very High	35.54	6.06
High	18.91	25.87
Medium	9.43	35.61
Low	9.60	16.11
Very Low	17.93	7.17

Source: Calculated by the author

3.6. Inter-relationship among different indicators of educational facilities:

As all the indicators are considered equally important for the development of the level of educational facilities, therefore investigating the inter-relationship between indicators is very inevitable. The table 6 and 7 shows Pearson's correlation coefficient of the selected indicators and their relationship with the calculated education index.

Table 6: Pearson Correlations Coefficient of selected indicators in 2001

	X1	*X2*	*X3*	*X4*	*X5*	*X6*	*X7*	*X8*	*X9*	*X10*	*X11*	*X10*	***EI***
X1	1.000												
X2	0.589	1.000											
X3	0.645	0.973	1.000										
X4	0.655	0.798	0.916	1.000									
X5	-0.192	-0.438	-0.502	-0.546	1.000								
X6	0.797	0.718	0.754	0.718	-0.172	1.000							
X7	-0.084	-0.026	-0.043	-0.066	0.136	-0.015	1.000						
X8	0.332	0.275	0.284	0.262	0.133	0.208	0.120	1.000					
X9	0.770	0.762	0.814	0.796	-0.437	0.847	0.002	0.502	1.000				
X10	-0.381	-0.154	-0.230	-0.331	0.249	-0.400	0.199	0.171	-0.320	1.000			
X11	-0.732	-0.768	-0.805	-0.763	0.497	-0.693	0.010	-0.151	-0.725	0.307	1.000		
X12	0.033	-0.122	-0.103	-0.056	0.048	-0.033	0.091	-0.074	-0.092	-0.034	0.049	1.000	
EI	**0.757**	**0.795**	**0.823**	**0.765**	**-0.142**	**0.808**	**0.152**	**0.611**	**0.864**	**-0.077**	**-0.632**	**0.110**	**1.000**

Source: Computed by the author

In consideration of the year 2001, except indicators X5, X10 and X11, all other indicators show a positive correlation in relation to their educational index. The indicators X1, X2, X3, X4, X6 and X9 show a relatively very high positive correlation with their calculated education index (Table 6). Regarding the year 2011, only three indicators, i.e. X5, X7 and X11 show a negative correlation with the education index. All other indicators except X10 and X12 show a highly positive correlation, which indicates that these indicators have highly correlated with the education index.

Table 7: Pearson Correlations Coefficient of selected indicators in 2011

	X1	*X2*	*X3*	*X4*	*X5*	*X6*	*X7*	*X8*	*X9*	*X10*	*X11*	*X10*	***EI***
X1	1.000												
X2	0.644	1.000											
X3	0.686	0.976	1.000										
X4	0.677	0.817	0.923	1.000									
X5	-0.377	-0.571	-0.603	-0.585	1.000								
X6	0.756	0.720	0.741	0.689	-0.327	1.000							
X7	-0.492	-0.549	-0.607	-0.636	0.488	-0.567	1.000						
X8	0.369	0.379	0.386	0.353	0.116	0.362	-0.199	1.000					
X9	0.745	0.747	0.779	0.741	-0.485	0.889	-0.648	0.593	1.000				
X10	-0.085	-0.041	-0.058	-0.080	0.211	-0.060	-0.060	0.192	0.006	1.000			
X11	-0.548	-0.664	-0.714	-0.715	0.663	-0.622	0.398	-0.155	-0.633	0.283	1.000		
X12	-0.089	-0.191	-0.167	-0.104	0.183	-0.082	0.157	-0.004	-0.138	-0.191	0.077	1.000	
EI	**0.761**	**0.775**	**0.793**	**0.731**	**-0.155**	**0.804**	**-0.413**	**0.690**	**0.817**	**0.202**	**-0.438**	**0.017**	**1.000**

Source: Computed by the author

4. Conclusions and policy implication:

The study assessed the block-wise level of development in the undivided Medinipur district and also tried to analyze changes in their development level from the year 2001 to 2011. The block-wise calculated education index, their relative rank and level of development for the years 2001 and 2011 displayed a comparative level of assessment of every individual block. The spatio-temporal analysis and mapping show that there presents a considerable level of inequality with respect to the availability of educational facilities. The study identified that western blocks are highly deprived with respect to the availability of educational facilities. It is observed that though eastern blocks shows a very high level of educational development in the year 2001, the region also faced challenges in the year 2011 due to the rapid increase of population pressure within those highly populated blocks. The study argued that improvement in educational facilities is necessary to meet the demands of increasing population pressure. Therefore, urgent improvement in educational infrastructure and facilities and their easy accessibility and availability is necessary to cope with the underdevelopment condition. Furthermore, more deprived blocks needs specific assistance by local government and from other organisation to strengthen the level of educational facility in that area, which can be helpful for balanced development to the entire study area.

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References:

[1] Afzal, M., Butt, A. R., Akbar, R. A., & Roshi, S. (2013). Gender Disparity in Pakistan: A Case of Middle and Secondary Education in Punjab. *Journal of Research and Reflections in Education, 7*(2), 113-124.

[2] Agrawal, T. (2014). Educational inequality in rural and urban India. *International Journal of Educational Development, 34*, 11-19.

[3] Atuahene, F. & Owusu-Ansah, A. (2013). A Descriptive Assessment of Higher Education Access, Participation, Equity, and Disparity in Ghana. SAGE Open, July-September 2013: 1–16. DOI: 10.1177/2158244013497725

[4] Banu, N. & Rawal, S. K. (215). Regional Disparities in Determinants of Educational Status in West Bengal, India: A Spatial Descriptive Approach. *IOSR Journal of Humanities and Social Science, 20*(4), 32-39.

[5] Bishnoi, N. K. & Aneja, R. (2008). Regional Variations of Socio-Economic Development in Haryana: A District Level Analysis. *Indian Journal of Regional Science, 40*(2), 26-40.

[6] Bureau of Applied Economics and Statistics. (2001). District Statistical Hand Book, Midnapore, Govt. of West Bengal

[7] Bureau of Applied Economics and Statistics. (2010 & 2011 Combined). District Statistical Hand Book, Paschim Medinipur, Govt. of West Bengal.

[8] Bureau of Applied Economics and Statistics. (2010 & 2011 Combined). District Statistical Hand Book, Purba Medinipur, Govt. of West Bengal.

[9] Das, G. (2020). Regional Disparity of Educational Status and Development of Jalpaiguri District. In S. K. Roy & J. Mete (Eds.), EDUCATION: IN A NEW OUTLOOK (pp. 1-21). N. B. PUBLICATIONS, Ghaziabad -201102. (India)

[10] Debapriya, A. & Mohanty, M. K. (2008). Inter-district Disparity in the Levels of Development in Education and Health Care Facilities - A Case of Orissa. *Indian Journal of Regional Science*, 40(1), 118-123.

[11] Directorate of Census Operations. (2001). District Census Handbook, District:Medinipur, West Bengal.

[12] Directorate of Census Operations. (2011). District Census Handbook, Paschim Medinipur, West Bengal.

[13] Directorate of Census Operations. (2011). District Census Handbook, Purba Medinipur, West Bengal.

[14] Diwakar, D. M. (2009). Intra-Regional Disparities, Inequality and Poverty in Uttar Pradesh. *Economic and Political Weekly, 44*(26/27), 264–273. http://www.jstor.org/stable/40279790

[15] Dube, T. (2015). Gender Disparities in Educational Enrolment and Attainment in Sub-Saharan Africa. *Journal of Educational and Social Research, 5*(3), 279-284. Doi:10.5901/jesr.2015.v5n3p279

[16] Ghatak, S. (2012). Level of Educational Development and the Underlying Disparities: A Study of Burdwan District, West Bengal. IOSR Journal of Humanities and Social Science, 1(2), 11-16.

[17] Ghosh, M. (2011). Regional Disparities in Education, Health and Human Development in India. *Indian Journal of Human Development, 5*(1), 5-28.

[18] Government of India (1986). National Policy on Education 1986. Ministry of Human Resource Development, New Delhi.

[19] Government of India (2020). National Policy on Education 2020. Ministry of Human Reource Development, New Delhi.

[20] Hamid, A., Akram, N. & Shafiq, M. (2013). Inter and Intra Provincial Educational Disparities in Pakistan. *Pakistan Journal of Social Sciences (PJSS), 33*(2), 447-462.

[21] Hoque, J. & Hashmi, S. N. I. (2020). Regional Disparity in the Levels of Educational Development in Uttar Dinajpur District of West Bengal, India. IJSRD - International Journal for Scientific Research & Development, 8(1), 77-81.

[22] Kumari, R., & Raman, R. (2011). The inter-District disparity in health care facility and education: A case of Uttar Pradesh. *Journal of Education and Practice, 2*(1), 38–56.

[23] Kumari, R. (2014). Growing Regional Disparity in Uttar Pradesh: Inter-District Analysis, *Artha Vijnana, LVI*(3), 339-360.

[24] Maji, K. & Sarkar, S. (2017). Intra-District Disparities in Primary Education: A Case Study of Bankura District, West Bengal. *Space and Culture, 4:3,* 77-92. DOI: http://dx.doi.org/10.20896/saci.v4i3.214

[25] Majumder, S. (2021). Spatial Pattern of Multi-dimensional Regional Disparities in the Level of Socio-economic Development in West Bengal: A Geographical Analysis. *Geosfera Indonesia, 6*(3), 260-300. doi:10.19184/geosi.v6i3.25728

[26] Rasool, R. R., Shafiq, M. U., Ahmed, P. and Singh H. (2016). Disparities in the Levels of Educational Development in Jammu and Kashmir, India: A District Wise Analysis. *International Research Journal of Social Sciences, 5*(3), 19-24.

[27] Tabassum, Q. (2016). A cross district disparity at primary level (An analysis of the selected districts of Uttar Pradesh). *GYANODAYA-The Journal of Progressive Education, 9*(1), 19-28. http://dx.doi.org/10.5958/2229-4422.2016.00003.7

[28] Tilak, J.B.G. (2006). Education - A Saga of Spectacular Achievements and Conspicuous Failures. In *India Social Development Report (*pp. 33-49), Council for Social Development, Oxford University Press, New Delhi.

[29] UNDP (1990). Human Development Report 1990. Oxford University Press, New Delhi.

[30] United Nations (2015). The Millennium Development Goals Report 2015, New York. https://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf

[31] United Nations Foundation (2015). Sustainable Development Goals (SDGs). https://www.undp.org/