Spatial Variation of School Facilities in Barddhaman District, Block Level Study
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Abstract: In human life some basic necessities are required to fulfill the overall development. Easy access to education facilities is one of them. Educational facilities should be uniformly distributed in accordance to the population. For the universalization of education, Government of India and State Governments have implemented different policies to make effective and sufficient provision of infrastructure for education. Here we will be made to trace the status of school education facilities of different blocks of Barddhaman district. Barddhaman district is the most advanced/progressive district in West Bengal. It is expected that less disparity is seen among the blocks in respect of educational facilities. But the paper gives the result that in all blocks of Barddhaman, education facilities are not equally distributed. The disparity is high in secondary and higher secondary school level than the primary and middle school level. Due to universalization of elementary education and also because of secondary education has not received much attention from the policy makers.

Key Words: Development, Disparity, Infrastructure, Elementary

I. Introduction
Education has a significant role for human development as well as social development. The role of education for social development has been recognized ever since the days of Plato. Education, Plato believed, is indispensable for the economic health of a structured society, as education makes citizens 'reasonable men'. Since education has high economic value, Plato argued that a considerable part of the community's wealth must be invested in education (Ghatak, 2012). “Literacy skills are fundamental to informed decision-making, personal empowerment, active and passive participation in local and global social community” (Stromquist, 2005). Education holds an important position in India’s development priorities. Successive development policies and Five-Year national development plans have accorded high priority to education development (NUEPA, 2014). In the hierarchy of education system, school education is the base of all that. Beside school education is common needs of human life. So allocation and easy access to school facilities is the most concern for the policy makers. Educational facilities should be uniformly distributed in accordance to the population. For the universalization of education, Government of India and state governments have implemented different policies to make effective and sufficient provision of facilities for school education. But still there is an imbalance in every stairs of education system. Imbalances may be defined as the disparities and uneven distribution of different indicators within a particular geographical region. Imbalances caused by several factors due to misallocation and misutilazation of resources. When people had a less opportunity to admit their students in schools, the enrolment pattern had a unique nature where pupils from dominant caste groups had the larger shares with higher participation of male children (V.Narayan, 2010). This changing pattern of enrolment is giving the birth of social disparities within the region. The problems relating to educational backwardness vary between regions and between groups of people (Sengupta et al, 2001).

II. Objectives
The present study is aimed at the following objectives (1) to find out the spatial magnitude of educational facilities at inter block level of each level of education system, (2) to analyze the spatial variation of educational facilities at each level of formal education system in Barddhaman district.

III. Data and Methodology
The study is mainly based on secondary data which is based on 2011 census. The data is collected from different secondary sources like Census of India, District Statistical Hand Book, and Economic Review of West Bengal. To represent the data spatially different maps and diagrams have been prepared with the help of different statistical techniques and GIS software. The blocks have been chosen as the unit area of the study. Municipality
and Municipal Corporations are excluded from the study because this urban unit consist only urban population whereas blocks consist both rural and urban population. For each indicator we have calculated the Z score. After that for each level we have calculated the composite Z score and finally we have calculated the overall composite Z score for whole school education.

For Each Indicator: \( Xi = (X - \bar{X}) / SD \)

For Each Level: \( X^I = \sum Xi \)

For Overall School Education: \( X^{II} = \sum X^I \)

I. Study Area

The district of Barddhaman falls under the Presidency Division of West Bengal and is situated from 22\(^\circ\)56’ to 23\(^\circ\)53’ North Latitudes and from 86\(^\circ\)48’ to 88\(^\circ\)25’ East Longitudes. The district has six Sub-divisions, viz. Asansol, Durgapur, Burdwan Sadar (North), Katwa, Kalna and Burdwan Sadar (South). There are Thirty-One Community Development (C.D.) Blocks, Nine Municipalities and Two Municipal Corporation in the district. On 7 April 2017, the district was bifurcated into Purba (East) Barddhaman district and Paschim (west) Barddhaman district. The Purba (East) Barddhaman district comprises four subdivisions: Kalna, Katwa, Barddhaman Sadar (North) and Barddhaman Sadar (South). Paschim (west) Barddhaman district comprises two subdivisions: Asansol Sadar and Durgapur but as this work is based on the census 2011 that’s why it is taken as a whole.

The present study area is presently divided in two parts but as this work is based on the census 2011 that’s why it is taken as a whole. The present study area is selected as this is a developed district and here is an appropriate distinction between agricultural and industrial sector within the district. On the basis of economic activities we can divide it in two parts eastern part which is mainly agricultural part and western part which is mainly industrial in nature. So, this study area is a burning example for revealing the educational disparity between two different economic practices. This is the relevance for selecting the study area.

II. Results and Discussion

There are broadly four stages of school education in India. These are the primary, upper primary, secondary and higher secondary stages of education. This pattern envisages five years of primary, three years of upper primary, and two years of secondary and two years of higher secondary education.

Spatial variation of Primary School Facilities

<table>
<thead>
<tr>
<th>Composite Z-Score Value</th>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2.3 to -0.70</td>
<td>Raina-II Faridpur-Durgapur, Pandabeswar, Kanksa, Burdwan-I, Burdwan-II, Bhatar, Ketugram-II</td>
</tr>
<tr>
<td>-0.7 to 0.50</td>
<td>Salanpur, Jamuria, Galsi-Lausgram-Lausgram-II, Memari-I,Memari-II, Raina-I, Khandogosh, Mangalkote,Ketugram-I,Katwa-II, Purbasthali-II, Kalna-I, Kalna-II, Galsi-II, Katwa-I</td>
</tr>
<tr>
<td>0.50 to 3.70</td>
<td>Raniganj, Barabani, Andal, Jamalpur, Purbasthali-I, Monteswar</td>
</tr>
</tbody>
</table>

Source: Calculation is based on publication of Census of India, 2011, Data on School Education in Different blocks of Barddhaman.
Primary level is the grass root level of School education System. It Consists of Class 1 to 4. For measuring the spatial variations in primary level three indicators have been taken such as Primary Schools per hundred square kilometer area, Primary schools per lakh of population and student teacher ratio. As per methodology we have calculated the Z score for each indicator. For first indicator Z score varies from -1.55 (Aushgram II) to 2.27 (Raniganj). For the Second indicator Z score ranging from -2.60 (Pandebeswar) to 2.09 (Aushgram II). For final indicator the Z score ranging between -1.73 (Raina II) to 2.78 (Raniganj). Finally we have calculated the composite Z score value for primary level. The Z score value Varies from -2.3 (Kanksa) to 3.70 (Raniganj).

Spatial variation of Middle School Facilities

Table 2: Disparity of Middle School Facilities in Barddhaman, 2011

<table>
<thead>
<tr>
<th>Composite Z-Score Value</th>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5.70 to -2.90</td>
<td>Faridpur-Durgapur, Ausgram-I, Bhatar, Mangalkote, Katwa-I, Kalna-I, Kolua-II, Monteswar, Galsi-I, Monteswar-II, Purbasthali-II</td>
</tr>
<tr>
<td>-0.30 to 3.10</td>
<td>Barabani, Raniganj, Jamuria, Andal, Pandeswar, Burdwan-I, Burdwan-II, Memari-II, Purbasthali-I</td>
</tr>
</tbody>
</table>

Source: Calculation is based on publication of Census of India, 2011, Data on School Education in Different blocks of Barddhaman.

After the primary the next level is Middle School level which comprises of Class 5 to 8. For measuring the spatial variations in middle level three indicators have been taken such as Middle Schools per hundred square kilometer area, Middle Schools per lakh of population and student teacher ratio. For the first indicator highest and lowest Z score are 3.29 (Raniganj) and -1 (Monteswar). For the second indicator Z score varies from .14 (Barabani) to -3 (Monteswar). For the last indicator z score ranging from 3.46 (Memari II) to -1.67 (Monteswar). In this level composite Z score varies from 3.1 (Raniganj) to -5.70 (Monteswar).
Spatial variation of High School Facilities

Table 3: Disparity of High School Facilities in Barddhaman, 2011

<table>
<thead>
<tr>
<th>Composite Z-Score Value</th>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-7.0800 to -3.1200</td>
<td>Pandabeswar, Raina-I, Barabani, Jamuria, Faridpur-Durgapur, Salanpur, Kanksa, Raniganj</td>
</tr>
<tr>
<td>0.8400 to 4.800</td>
<td>Galsi-II, Andal, Jamaipur, Raina-II, Ketugram-I, Ketugram-II, Kalna-I, Kalna-II, Monteswar</td>
</tr>
</tbody>
</table>

Source: Calculation is based on publication of Census of India, 2011, Data on School Education in Different blocks of Barddhaman.

The next level of school education system is High School level which comprises of Class 9 to 10. For measuring the spatial variations in High School level three indicators have been taken such as High Schools per hundred square kilometer area, High Schools per lakh of population and student teacher ratio. For the first indicator Z score varies from (1.94) Jamalpur to (-2.49) Pandebeswar. For the next indicator Z score varies from (1.6) Monteswar to (-2.13) Pandebeswar. Final indicators varies from 2 (Purbasathali II) to -2.46 (Pandebeswar). Finally composite Z score varies from 4.80 (Jamalpur) to -7.08 (Pandebeswar).

![Disparity of High School Facilities](image)

Source: Based on Table 3

Spatial variation of Higher Secondary School Facilities

Table 4: Disparity of Higher Secondary School Facilities in Barddhaman, 2011

<table>
<thead>
<tr>
<th>Composite Z-Score Value</th>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2.5000 to 0.9333</td>
<td>Barabani, Jamuria, Galsi-I, Ausgram-I, Mangalkot, Ketugram-II, Katwa-I, Monteswar</td>
</tr>
<tr>
<td>4.3667 to 7.8000</td>
<td>Andal, Raina-II, Raniganj, Purbasthali-II, Pandabeswar, Salanpur</td>
</tr>
</tbody>
</table>

Source: Calculation is based on publication of Census of India, 2011, Data on School Education in Different blocks of Barddhaman.

Finally at the top of the school education system is Higher Secondary School level is compromises of Class 11 to 12. For measuring the spatial variations in Higher Secondary School level three indicators have been taken such as Higher Secondary School per hundred square kilometer area, Higher Secondary School per lakh of population and student teacher ratio. For the first indicators Z score varies from 4.48 (Andal) to -1.10 (Aushgram I). For the next indicator Z score varies from Raina II (2.60) to Memari I (-1.71). For the last indicator Z score varies from Pandebeswar (2.30) to Salanpur (-1.86). Finally composite Z score varies from 7.80 (Andal) to Ausgram I (-2.50).
Spatial Variation for Overall School facilities

<table>
<thead>
<tr>
<th>Composite Z-Score Value</th>
<th>Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>-8.90 to -3.60</td>
<td>Salanpur, Galsi-I, Faridpur-Durgapur, Pandabeswar, Kanksa, Ausgram-I, Bhatar, Mangalkote, Ketugram-II, Katwa-I</td>
</tr>
<tr>
<td>-3.60 to 0.70</td>
<td>Jamuria, Burdwan-I, Ausgram-II, Galsi-II, Memari-I, Raina-I, Raina-II, Khandogosh, Ketugram-I, Katwa-II, Kalna-I, Kalna-II, Monteswar</td>
</tr>
<tr>
<td>0.70 to 11.80</td>
<td>Barabani, Raniganj, Andal, Burdwan-II, Memari-II, Jamalpur, Purbasthali-I, Purbasthali-II</td>
</tr>
</tbody>
</table>

**Source:** Calculation is based on publication of Census of India, 2011, Data on School Education in Different blocks of Barddhaman.

Finally an overall composite Z score have been calculated by summing up all the z score values of different education level to show the blockwise overall condition of school education facilities. Overall composite Zscore varies from Andal (11.8) to Ausgram II (-8.9). In fig no. 6 we have see that eight blocks are come under Z score values ranging from .70 to 11.80. Thirteen blocks are come under Z score values ranging from .70 to -3.6. Ten blocks are included where Z score varies from -3.6 to -8.9.

Overall condition is mainly worst in the blocks which are situated in the middle part of Barddhaman district. On the other hand condition is much better in the blocks which are situated extreme eastern and western part of the Barddhaman because in middle part the number of school and the ration between the teacher and student are not adequate as most of the people depend on government school education that’s why the number of student per school is became very high.
On the other hand in better part these conditions are much better because maximum people are capable to give their children private school education that’s why in case of government school number of students per school is become less as well as teacher student ratio is also very good in state. In case of overall school education system three blocks of western part and four blocks of eastern part of the district are very good. If we discuss the locational aspects of these blocks we can see that they all are situated very close adjacent with urban areas or metropolitan city. This creates a positive impact on the educational system of those areas. The disparity is high in Secondary and Higher Secondary School level (Fig.4 & 5) than the Primary and Middle School level. The standard deviation (SD) for the Secondary and Higher Secondary School is 3.56 and 4.25 respectively where the standard deviation (SD) in Primary School and Middle school is 1.23 and 1.95 respectively. Due to universalization of elementary education, secondary education has not received much attention from the policy makers.

Disparity in Various Level of School Education within Blocks

![Disparity in Various Level of School Education within Blocks](image)

**Source:** Calculation is based on publication of Census of India, 2011, Data on School Education in Different blocks of Barddhaman.

From this figure we can clearly understood the disparity in various level of school education within blocks. It is clear from the figure (7) that high disparity prevails between Primary and Middle School which is from Ausgram –I. On the other hand, lower disparity is from Memari-I. Disparity high between Middle school and Secondary school is from Pandabeswar and lower disparity is in Raniganj. Higher disparity in case of Secondary and Higher Secondary school is coming from Andal and lower from Memari-II. In case of overall disparity highest in Pandabeswar (between Middle and Secondary School) and lowest is in Memari-II (between Higher Secondary and Middle School).

But another picture depict from this figure which is different from above context that though there is different kind of disparity depicted in above part but it can’t throw light on the level of school education in these blocks. If we minutely observe we can see that in case of educational level is satisfactory in Raniganj, Andal, Burdwan-I, Meamari-I, Purbasthali-I and II, Kalna-I and II and condition is worst in Salanpur, Galsi-I, Faridpur-Durgapur, Kanksa, Bhatar.

### III. Conclusion and Suggestions

The present paper tries to find the spatial inequality in distribution of education facilities in respect to their population size. Sometime allocation of facilities policy ignores the population size in that particular area. To maintain the equality the policy gives the same facilities to the poor as well as developed area. That’s why developed area going to be more reach than the poor area. Allocation facilities should maintain the equity policy to reduce the disparity among the region. Model 1(a) shows that the policy makers ensure that everyone gets same thing without considering the demand factor of the area and model 1(b) shows that the policy makers are trying to understand the needs of the people and give people what they need in order to ensure equity.

Hence policy makers should follow the equity rule in order to reduce the inequality in the distribution of facilities among the blocks. So proper distribution of facilities is very much needed to reduce the inequality among the block.
References
National University of Educational Planning and Administration (NUEPA), Education for All Towards Quality with Equity India. New Delhi. 2014.