EDUCATION INFRASTRUCTURE INDEX:
AN ATTEMPT ON HUGLI DISTRICT, WEST BENGAL.

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Abstract

The transformation of the Globe from a 'Growth Based economy' to 'knowledge based' one and ever-increasing emphasis on Human Development has brought education into the forefront of developmental debate. Education is vital not only in itself, but also because of numerous positive externalities created by the spread of education, like, human capacity building, human empowerment and spread of awareness in all fronts. Peoples' access to education depends crucially on the educational infrastructure in place. The present paper is a humble attempt to explore the extent of physical and ancillary educational facilities along with their regional variation with reference to Hugli district of West Bengal. The study attempts to scrutinize the nature of education infrastructure index with the aid of access, facility and teacher index. Regional disparities loom large between western and eastern half, between more developed and less developed urban track, between rural and backward rural areas and between rural and urban areas as well in so far as availability and infrastructural provisions are concerned.

Key Words: -- Access index, Facility index, Teacher index, Education Infrastructure index, Regional disparity.

INTRODUCTION

It's believed that an increasing access and enrolment do not necessarily ensure school effectiveness or educational progress. They are, of course, parameters of development of education, rather than being measures of standards of quality education, (Sujatha and Geetha Rani, 2011, p. 14). Peoples' access to education depends crucially on the educational infrastructure in place. Effective and fruitful functioning of schools relies on the provision of physical and academic facilities. In so far as the question of quality schooling is concerned, facilities in a school can be divided into two broad types, viz, physical and ancillary facilities. Physical facilities

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are subdivided into infrastructure and academic facilities. Physical infrastructural facilities encompass the availability of permanent buildings, boundary wall, adequate classroom etc. The provisions of library, laboratory, teaching-learning aids etc. constitute the academic facilities. To boot, the favourable teacher-pupil, student—classroom, teacher per institution, students per institution, co-curricular activities, training and educational quality of teachers, plenty of subject teachers etc. are mandatory to make learning environment healthy within the school environment. Ancillary facilities largely include the availability of drinking water, playground, urinal, separate toilet for girls, counseling and guidance cell etc. These facilities are also called the student welfare facilities.

In this paper the attempt is to look at the extent of availability of these facilities. Secondary source of data from U-DISE, D.I. Office, Hooghly District; AISE, NSS 64 th round data, DHDR, Hooghly District; D.P.O. Office, Hooghly District and also field level data collected from sample schools have been analyzed for close scrutiny in order to find out the regional disparities in terms of the infrastructural provisions in various pockets of hugli district of West Bengal. As AIES, DISE data throw light on macro level situations; these data are supplemented with micro level data collected from sample schools.

OBJECTIVES:--
The paper scrutinizes the followings, viz,

    a.) Availability and access index of educational institutions,

    b.) Infrastructural inputs to the secondary school education—physical and ancillary facilities,

    c.) Education Infrastructure Index and its regional variation.

METHODOLOGY:--
A list of the primary and high schools (secondary and higher secondary) were obtained from the School Inspector office at Puncha and Kenda circles and Puncha Block Development office as well. After that detailed school report cards mentioning the physical and ancillary facilities of schools along with teacher strength, school attributes like sc, st enrolment, % repeaters, Drop-out, % students scoring more than 60 % marks, secondary pass outs etc. were obtained. Various Indexes were prepared to depict the infrastructural provisions.

i) Accessibility Index / Access Index:-
The actual data obtained from Census of India 2001 indicate the distance (that too in an ordinal scale) between the corresponding village and the nearest educational institution of a given type. For the sake of quantification this distance in ordinal scale

is quantified. Although presence of arbitrariness in the selection of weights cannot be ruled out, they should reflect the magnitude of deprivation because of non-availability of institutions. Being a measure of negativity, it is quite natural that the weights should decrease with the increase in distance and increase with advanced standard of learning (as primary goal of Human Development is literacy and education for the masses). The following weightage scheme is followed:

Table.1: Classification of village.

Classification of village	Within Village	Within 1 km	Beyond 1 km
For villages having junior high and secondary schools	0	(-) 3	(-) 5

The negative scores thus collected for villages are averaged across the block to yield a block average that might be considered as an indicator of non-availability of institutions. The maximum Block Average comes out to be (-) 8. As a result, the individual Block Score is obtained as: [(Block non-availability Average) + 8] / 8 resulting in indicative score lying between '0' and '1'. It may be noted that score close to '0' indicates non availability to a greater extent indicating deprivation than scores close to '1' indicating opportunity. This ordinality is followed for the other scores/indices also.

ii) School Facilities Index / Facility Index:-
Geometric means of the nine Facilities Scores ,namely, Pucca Building, boundary wall, Drinking Water, Sanitation Facilities, Library, laboratory, Play ground, computer, hostel facilities are computed to give us Aggregate Facilities Score. This is converted to Facilities Index using the UNDP goalpost method.

iii) Teacher Availability Index / Teacher Index:-
Geometric mean of Teachers-Student Ratio and Teachers per School is computed to give us Aggregate Teacher Availability Score. This is converted to Teacher Availability Index using the UNDP goalpost method.

iv) Educational Infrastructure Index (EII):-
EII is computed as simple average of Accessibility Index, School Facilities Index, and Teacher Availability Index and the Blocks were ranked.

RESULTS AND DISCUSSION:--

Section 1:-- Availability and Accessibility of educational institution:--
There are 2987 primary schools, 278 ssks, 99 junior High schools, 513 High schools run by government in hugli district.To boot, private bodies run 350 primary

schools,69 junior high schools, and 51 high schools. Relative to population also availability figures are quite satisfactory vis-à-vis national and state figures. (DHDR, 2010, P.104). In so far as the secondary schools are concerned, the blocks namely, Goghat II, Goghat I, polba dadpur, tarakeswar etc. show good performance, whereas theblocks and municipalities/ municipal corporations lagging behind include Haripal, Khanakul II, Chinsurah-magra, tarakeswar, Arambagh (M), baidyabati,Bhadreswar, Chapdani etc. In terms of higher secondary schools the best performing blocks and municipalities/ municipal corporations are Hooghly- chinsurah (m), chadannagore municipal corporsation, Jangipara, Arambagh(m) whereas the worst performing ones are , polba dadpur, Goghat II, balagarh, ChanditalaI, Chaditala II, Panduah, Bhadreswar(m). Interestingly from the computation it is found that urban blocks are doing well in terms of availability of educational institution for higher secondary level. Contrary to these such blocks that are good performers (such as polba- dadpur, Goghat II etc.)
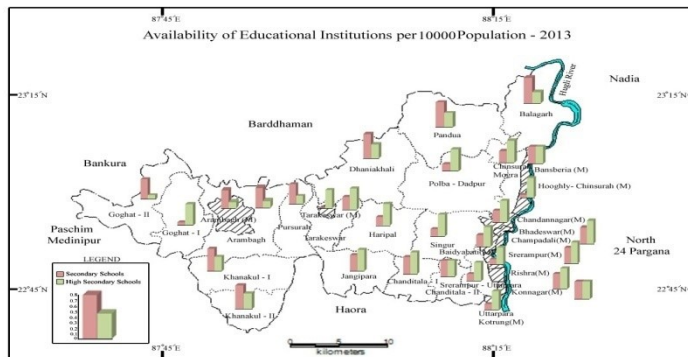
In terms of secondary school availability are found to be the very bad ones in respect to post secondary sections. Another variation to note that very developed urban tract like Hooghly- chinsurah (m), chadannagore municipal corporation are showing great result than the less developed ones like Bhadreswar, chapdani,Bansberia, etc. in so far as the availability of secondary schools are concerned. This reflects one of the dynamics of school education in urban areas wherein almost all secondary educational institutions are crunching.   These schools are being sandwiched between the mushrooming of English medium schools and sophistication of modern education. Characterized by ever dwindling down enrolment, these schools are on the jaws of extinction. Few to very few higher secondary schools are flourishing in the developed urban tracks. The picture is not at all grim in non urban areas for secondary schools.

While urban centre contain educational institutions within their periphery, rural areas often do not, and substantial number of rural children drops out from the learning process because of the distance of schools and colleges. Physical distance to

school is cited as a major barrier to participation for rural children in India (UNICEF, 2006; Ward, 2007). In India, on average in most villages primary schools are one km away, middle schools are at three km away and secondary and higher secondary are five km away from the village center (Census, 2001; Ward, 2007). A considerable travel time is involved in accessing these schools. This time lost in travelling cannot be used either for productive activities or for leisure. It is just the additional cost that has to be borne to acquire education and is not used in actual learning. In many instances, the distances have to be covered on foot which leads to physical discomfort especially in hot summers and monsoons. The time lost is a major implicit cost in schooling decision. Students become irregular in classes that ultimately lead to drop out. It is observed that in the context of middle schools, about 42.55 per cent of villages have them within the periphery of the village, about 35 per cent have within 1 km range, and 22 per cent have it beyond 1 km .

Table2: Accessibility & Availability of Educational Facilities in Rural Areas

| Indicator	Within village	Within 1 km	Beyond 1 km
Distance Of nearest High School	42.5	34.9	22.60

Source: Census of India, 2001, Village & Town Directories.

There exists a substantial regional variation in accessibility. To study these variations more carefully an accessibility index has been composed based on the distance of different types of institutions from the villages. The greatest (negative) weight age has been given to (non) availability of Primary Schools, and progressively lesser importance to higher grades. In terms of access index the best performing blocks are Serampore-Uttarpara, Chanditala II. Good results are also having in Pursurah, Khanakul II, Singur, Chanditala I, Chinsurah- Magra while Jangipara, Khanakul I, Goghat II, Dhaniakhali, Polba-Dadpur, Haripal are very bad performers in this regard. The remaining blocks embrace low to moderate nature of accessibility. Access index are found to be satisfactory in the municipalities.

Section II Infrastructural Provisions:-- Physical and Human

Infrastructure available to schools refers to both the provision of physical and ancillary facilities. Provision of physical and academic facilities is the precondition for effective functioning of schools and for achieving academic excellence. A school building not only provides identity to school, separating it from others, but also essential for fruitful teaching learning activity in the classroom and for facilating teachers, students and safeguarding materials from the vagaries of weather. At the all India level the percentage of schools possessing pucca building has substantially increased during the last twenty years or so. At the same time schools in kutcha

house and partially pucca building has dwindled down.

PHYSICAL FACILITIES IN SECONDARY AND HIGHER SECONDARY SCHOOLS
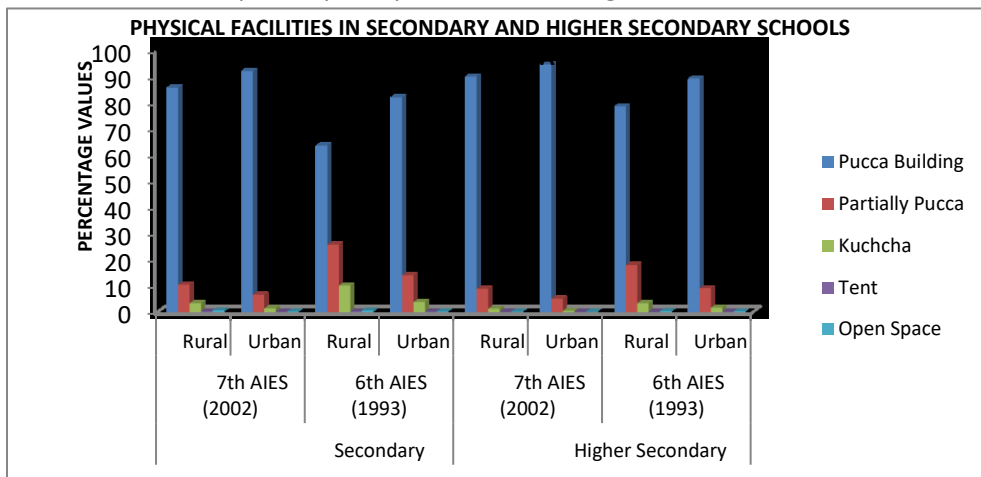
At secondary level, the extent of pucca building has increased from 69% in 1993 to 88% in 2002 whereas the figure stands from 84% in 1993 to 92% in 2002 for higher secondary schools. It needs mentioning that the extent of pucca building gradually rises with the increase in the level of schooling. Despite improvement, 12 percent of secondary and 8 percent of higher secondary schools still not having pucca building, 9 percent of secondary and 7 percent of higher secondary schools are running in partially pucca bulldings while 2.61 percent of secondary schools and 1 percent of higher secondary schools goes on functioning in katcha houses. More to note that 0.38 and 0.06 percent of secondary and higher secondary schools respectively are run in tents and secondary and higher secondary school function in open spaces register 0.38 and 0.06 percent respectively. Though in terms of percentage, these numbers look insignificant, viewed in the context of absolute numbers and the phenomenal increase in secondary schools, it drives home the point that lots need to be done to improve the condition of High schools in India. Also the matter of concern is that more than one tenth of secondary schools and seven percent of higher secondary schools do not have all-weather building.

With regards to Hugli district, about 97% high and higher secondary schools run in pucca buildings. In all but arambagh Municipalities almost 100% schools have pucca buildings, whereas in the block level at Dhaniakhali, balagarh, Chinsurah-magra, Polba-Dadpur, Goghat II blocks more than 10 percent schools are running in non-pucca buildings. Disencouraing figures are marked with regard to the existence of pucca boundary wall. Only 47% high schools in Hugli possess a well defined pucca boundary wall. Barring Chapdani(M), HCM, Baidyabati(M), no other blocks or municipalities have a satisfactory result in this aspect and the performance of the western blocks including Goghat I, II, Khanakul I, II, Arambagh, are found to be very disappointing.

The provision of Play ground, Library, Sanitation, Drinking water facilities make up the ancillary service of a school. Only forty six percent high schools in this District have the facilities of play ground. More than 50 percent schools in Panduah, Haripal, Jangipara, Goghat II, Arambagh Blocks and HCM, Bhadreswar (M), Uttarpara-Kotrung(M), Konnagar(M) have play ground in their possession. As regards to library facilities, about 32% high schools have libraries. Libraries ideally provide access to books that are beyond the class room texts and create a link with the developments taking place outside. They also make knowledge accessible to the students which are hitherto unaffordable. Storage of books in the best of schools is found not to be satisfactory Books are not accessible to the students for whom they are meant to be additional reading material. The essence of the library is in making the young minds be informed about the world outside and give them thoughts that are creative in nature and enhance their understanding of their lessons better. This function is not being fulfilled with the present conditions where thousands of books that lie with some of the big high schools. The smaller schools do not maintain separate libraries. The situation is very alarming in backward rural and small towns. It's a matter of great regret that during our survey most of the libraries are found in a frustrating tones and textures, lacking reference books, a place where unused papers heaps up, no librarians to look after, books scattered here and there and what not All blocks in Hugli are lagging behind in this aspects with Tarakeswar, Balagarh, Pursurah, Goghat I are more vulnerable in rural areas so as Arambagh(M) and Dankuni(M) in urban areas.

As per the 7 th all India Educational survey report the drinking water facilities for secondary schools within school premises in rural areas for government, Local body, Private aided and Private unaided is reported around 85.21%, 79.16%, 94.14% and 91.92%; for Higher secondary schools for rural area it is around 93.43%, 95.03%,98.31% and 96.57% respectively. In our study area 99.5% schools have drinking water facilities within school premises. Dhaniakhali, Jangipara Blocks register the values marginally below the average while khanakul I and II blocks embrace 13 and 14 points lower than the average values respectively. Toilet facilities are available in all secondary and higher secondary schools of the district barring one or two blocks. Dichotomies do exist between its availabilities and whether it is in usuable condition, separate toilet for girls etc.

Based on the nine indicators already mentioned in the methodology (facility score/ index part) we have calculated the facility score and index of the district under scrutiny. The blocks doing well in this indicator at rural areas consist of ChanditalaII, Singur, Haripal, Panduah, Khanakul II etc. while at urban areas Hugli-Chinsurah, Bansberia, Uttarpara-Kotrung, Baidyabati etc. Tarakeswar, balagarh, Polba Dadpur

are the most laggard blocks in rural areas in this district, so as Dankuni, Arambagh and Bhadreswar Municilipaties.

Taking number of teachers per school (TPS) and teacher per student into account we have obtained the teacher availability score and teacher index as well. Blockwise that are in better position with regard to teacher availability per schools include chanditala I and Haripal Block while the worst performing blocks are represented by Polba-Dadpur, Goghat II, Arambagh, Khanakul II, Arambagh, goghat I. In urban areas Arambagh and tarakeswar show satisfactory result while Rishra, Uttarpara Kotrung municipalities remains much behind.

The pupil teacher ratio (PTR) is the number of students per teacher. The lower the ratio, the better for developing the educational standard of a particular area since lesser number of students will get attention by a teacher. (Adhikari, 2012) The teacher pupil ratio is the lowest at Serampore-Uttarpara Block, followed by Tarakeswar block. Barring this two, no blocks of the study area possess ideal teacher pupil ratio of one teacher per 40 students. The blocks of the western part have shown a very high teacher pupil ratio, thereby revealing a poor educational conditions in them. In six blocks but Goghat I of the Arambagh subdivisions in the western half, one teacher has to teach more than 65 students on an average in a jam packed classroom, the highest value being 77 in Pursurah block, followed by 74 in Khanakul-I,70 in Khanakul II,Armbagh(68), Goghat I (66) Blocks. High teacher pupil ratio is also having in Panduah, Chinsurah-magra, Chanditala I, Polba-dadpur blocks to the tune of 50 to 60 range. The remaining blocks embrace less than 50 students per teacher. In the urban scenario, Bhadreswar, Chamdani, Tarakeswar, Armabagh areas register high teacher pupil ratio with Arambagh topping the list where more than eighty students are served by a teacher. From the analysis it is clear that dist. Hugli, in most cases barring one or two, show unhealthy trend in terms of pupil teacher ratio. Regional disparities loom large between western and eastern half, between more developed and less developed urban track, between rural and backward rural areas and between rural and urban areas as well in so far as number of student per teacher is concerned.

The PTR is substantially higher in rural areas than its urban counterparts both in secondary and higher secondary levels. This increase is mainly due to increase enrolment in rural areas without corresponding increase of number of teachers. Usually some teachers posted in the schools located in the rural areas are reluctant to work and managed to be posted elsewhere or take long leave. This is more pronounced among govt. school teachers, particularly women teachers.

Education Infrastructure Index in Block of Hugli District
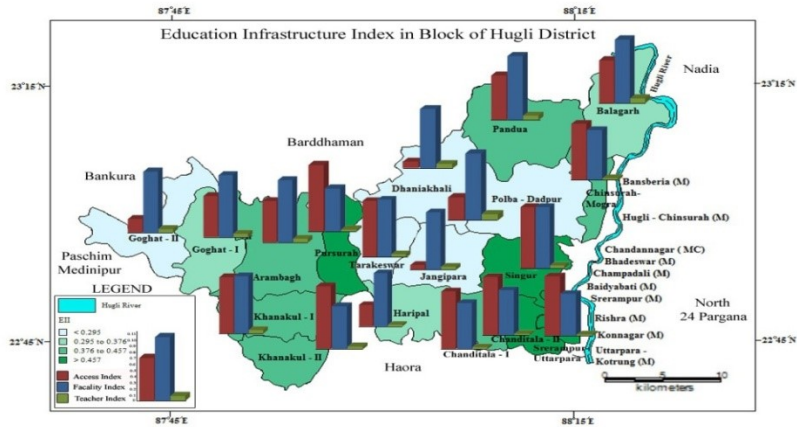
Combining the TPS and TSR, a Teacher Availability Index is prepared. No block is found to be satisfactory in this regard. However, Pursurah, Chanditala I, Khanakul I show higher values whereas Polba-Dadpur, Serampore-uttarpara, Goghat I, Balagarh, Tarakeswar are lagging behind. The urban areas also show very disappointing figure, marking no Municipalities but Arambagh Municipalities above 0.50 value.

Section III. Education infrastructure index:--

 Based on these three indexes discussed above, namely, the accessibility index, the facility index and the Teacher Availability index, an Education Infrastructure Index (EII) is prepared. It is observed that the best regions in terms of this combined index are Chanditala II and Serampore-Uttarpara and all the Municipalities. Barring this two blocks all the blocks register very low to moderate values, with jangipara as the most laggard ones immediately followed by Dhaniakhali, Balagarh, Polba Dadpur, Goghat II. The table and map speak for itself, as follows----
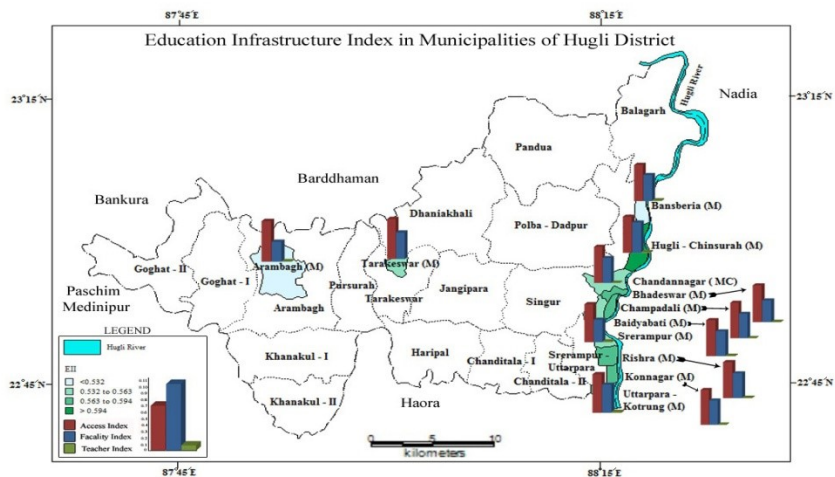

Education Infrastructure Index in Municipalities of Hugli District

Table:-- Education Infrastructure Index				
Block/Municipalities/Corporation	Access Index	Facility Index	Techer Index	Education Infrastructure Index
Dhaniakhali	0.07	0.63	0.3	0.33
Pandua	0.46	0.66	0.31	0.48
Balagarh	0.35	0.52	0.3	0.39
Chinsurah-Mogra	0.64	0.57	0.32	0.51
Polba-Dadpur	0.19	0.55	0.27	0.34
Tarakeswar	0.42	0.43	0.3	0.38
Haripal	0.26	0.64	0.34	0.41
Singur	0.68	0.68	0.31	0.56
Jangipara	0.05	0.56	0.32	0.31
Chanditala-I	0.74	0.59	0.38	0.57
Chanditala-II	0.89	0.69	0.33	0.64
Serampur-Uttarpara	0.9	0.64	0.27	0.60
Goghat-I	0.37	0.56	0.28	0.40
Goghat-II	0.14	0.62	0.31	0.36
Arambagh	0.45	0.68	0.32	0.48
Khanakul-I	0.6	0.61	0.39	0.53
Khanakul-II	0.75	0.51	0.33	0.53
Pursurah	0.82	0.53	0.42	0.59
Hooghly-Chinsurah(M)	1	0.84	0.28	0.71
Bansberia(M)	1	0.72	0.28	0.67
Tarakeswar(M)	1	0.66	0.46	0.71
Bhadreswar(M)	1	0.59	0.32	0.64
Champdani(M)	1	0.69	0.34	0.68
Chandannagar(M.C.)	1	0.65	0.28	0.64
Uttarpara-Kotrung(M)	1	0.73	0.27	0.67
Konnagar(M)	1	0.7	0.32	0.67
Serampur(M)	1	0.59	0.27	0.62
Baidyabati(M)	1	0.69	0.31	0.67
Rishra(M)	1	0.71	0.24	0.65
Dankuni(M)	1	0.42	0.34	0.59
Arambagh(M)	1	0.49	0.53	0.67
Source: -- Census of India, 2001, 2011; District Project Office, 2013; Computation from Authors, 2014.				

References:--

1. Bhatta, H.S.Ganesha. (2010). Secondary Education. New Delhi. APH Publishing House.
2. Kamle, M., and Adhikari, S., (2013). Resource and development of Jharkhand, *Indian Journal of Regional Science*, vol, XXXXV, no.1, Kolkata.
3. K.Sujatha., and P. Geetha Rani (2011). *Management of Secondary Education in India*. Shipra Publication, New Delhi.
4. Seventh (2002-07) and eighth (2008-12) all India school education survey report.
5. District Information on School Education(DISE) and U-DISE report, 2007 to 2012.
6. District Statistical Handbook, Hooghly, 2008 and 2010-11(combined), Beauru of Applied Economics and Statistics, Ministry of Information and Broadcasting, New Delhi.
7. Selected Educational Statistics, 2007-08.
8. NSSO (1999-2000), 55 th round, Government of India.