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Development of infrastructure in primary school in sundarban coastal region

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Abstract
Primary education is the base of education development and literacy. It is a basic need for people of any region. Primary schools are engaged to provide this education. After all infrastructure of the educational institution can give proper educational phenomena. Students come to school if the infrastructure is suitable. Parents also desire to admit their childes into school. Some regions are geographically backward such as Sundarban Coastal Region which has bad communication. In spite of lack of communication infrastructure of primary school is really improving. Peoples of this region are now responding to participate in educational program. This paper has investigated on infrastructure of primary school and its development. The study was administered on secondary data. Data sources were census report, SSA report and DISE report. The study selected 10 criteria which are playground, boundary wall, girls' and boys' toilet, drinking water, electricity, ramp, kitchen shed, student classroom ratio. The investigation revealed that girls and boys toilet, drinking water is the most developed infrastructure and very poor infrastructures are computer, student-classroom ratio and boundary wall.

Keywords: development, educational infrastructure, DISE, boundary wall

Introduction
The Sundarban is part of the world's largest delta, with a network of tidal rivers, creeks, islands, mudflats, coastal dunes, etc. It is characterized by a vast cover of mangrove forests with a rich variety of flora and fauna. Now a day it is facing from changing landscapes and climatic hazards. The southern part of Sundarban which is considered as a coastal area faces towards Bay of Bengal. The human populations of the coastal Sundarban are struggling against geographical challenges and frequent flood and cyclone. They need primary education which is possible by development of infrastructure in school. Literacy and basic schooling liberate people, impart skills and confidence and change the lifestyle of learners. They are instrumental in reducing sense of insecurity carried by an illiterate person. Elementary education is very important to gain decision making power, to be conscious from hazard and disaster, to adapt with changing environment, to be capable of invoking their rights. Infrastructure is physical facilities which attract children to learn in school. It also satisfies and encourages guardian or parents to admit children in school. It is widely known that availability of infrastructure facilities in school has considerable impact on school environment and it is one of the important indicators for assessing whether the schools are providing a conducive learning environment for children. During last two decades, emphasises have been taken to improve the primary school environment by Operation blackboard, SSA and so on. An attempt has also been made to provide adequate physical facilities as per the needs of schools, as recommended by education policy in India, NPE 1986. The policy has recognized that, 'unattractive school environment, unsatisfactory condition of buildings and insufficiency of instructional material function as de-motivating factors for children and their parents. The Policy, therefore, calls for a drive for a substantial improvement of primary schools and provision of support services' (NPE, 1986, 15). According to this policy, primary schools have to be provided with at least two rooms for conducting teaching learning process. Further, RTE Act 2009 has recommended that each school should be equipped with 'All weather building consisting of at least one classroom for every teacher and an office-cum-store-cum-Head teacher's room; barrier free access; separate toilets for boys and girls; safe and adequate drinking water facility to all children; a kitchen where mid-day meal is cooked in the school; playground; arrangements for securing the school building by boundary wall or fencing'.

Related Works
Several researches (Ajayi, 2002; Hallack, 1990; Kuuskorpi & Gonzalez, 2011) conducted in different international contexts specifically link availability of infrastructure facilities of school and school effectiveness (Bandyopadhay, 2015). Researchers also assessed the school infrastructure in primary level through geospatial analysis in regional context (Bhunia et. al. 2012). People have heard the name of Sarva Siksha Abhiyan but they are unaware about the details of it. The poor people in general have a low literacy level. They do not have an understanding about how the education system functions (Action Aid Report, 2005). According to Asiabaka (2008, 10) "management of facilities is an integral part of the overall management of schools. The actualization of the goals and objectives of education require the provision, maximum utilization and appropriate management of the facilities." According to her "the physical environment of a school is a major determining factor in the attainment of its objectives (Asiabaka 2008, 10)."

Importance of availability of physical facilities in schools and its optimum use have been a matter of concern across the globe (Bandyopadhay, 2015). Several studies have already been conducted in context of India to find out different determining factors of school effectiveness and efficiency and lack of physical facilities has been identified as one of the major problems across the states. An overview of some of these studies is being given in following paragraphs.

Despite considerable improvement in enrolment, many researches (Govinda & Bandyopadhyay, 2011a, 2011b, 2011c; De et.al. 2011; Pratham, 2012 etc) have constantly raised concerns that India will have to travel a long way to achieve the goal of Universialisation of Elementary Education and implement the Right to Education Act, 2009.

There are many reports have been published on primary education in Sundarban (Actionaid International, 2005; Mukti, 2005; Raghavan, 2015; Harder, 2016; Rao, 2016) [9].

Study Area

The study area was selected from remotely southern part of Sundarban delta which is a coastal area along the Bay of Bengal. Geographical variations made this area as a backward transport communication area. It is covering 5 blocks of South 24 Parganas district. The blocks are from east to west accordingly Gosaba, Kultai, Patharpratima, Namkhana and Sagar. Eastern side of this area is bounded by Bangladesh and Western side covering by Hoogly River and East Medinipur. The study area is divided into two parts such as eastern side and western side. It is pointed out that eastern part is belongs to more backward region with respect to communication than western part. Short study area information is given below:

Table 1: Block wise General Information

Block	Area in Sq. km	Population (2011)	Household
Gosaba	296.73	246598	58197
Kultali	306.18	229053	45093
Patharpratima	484.48	331823	69641
Namkhana	370.62	182830	41433
Sagar	282.11	212037	43716

***Source*:** Census report of India, 2011.

Fig 1: Location Maps (Green colour area in South 24 parganas indicates blocks of coastal area)

Objectives

Natural phenomena and extreme environmental condition creates barrier to communication and transport. The only communication medium is water ways through ferry, boat, launch etc. In spite of this the education system increased in this area. Peoples are trying to get their basic education through primary school. So, the study aims to investigate the present status of infrastructure in primary school, to identify

the most developed infrastructures, to find out if there are the differences in infrastructure between eastern side and western side of coastal area.

Methodology

The study was based on totally secondary data which are collected from several sources such as Census Report, SSA report and DISE yearly Report and computed by author. Descriptive type of method has been applied to complete this paper. Microsoft Excel software was used for data calculation and diagrammatic presentation. Statistical technique has also used for calculation. In this study a hypothetical test was also used to test any difference between west side coastal blocks and east side coastal blocks.

Primary School Status

This area is southern-most part of Sunderland. Education status is now developing way. In the starting time of the present century, the number of primary school was above 500 but after 16 years the number of primary school is increased or been double which is above 1000. So the number of primary school increased indicating development of primary school status probably due to implementation of Sarba Shiksha Abhijan and Right to Education Act-2009.

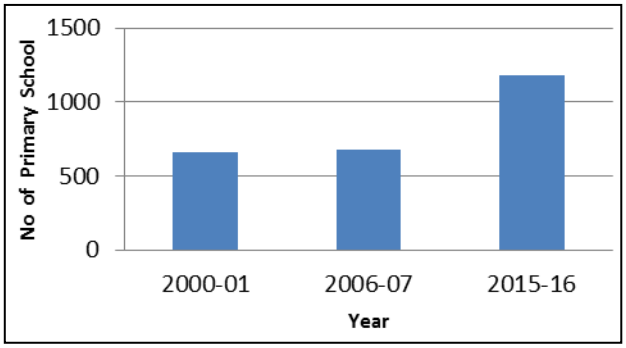

Fig 2: Year wise increase of primary school

During the research time line it has been seen that maximum primary school increased in Patharpratima where Kultali considered as least increased block.

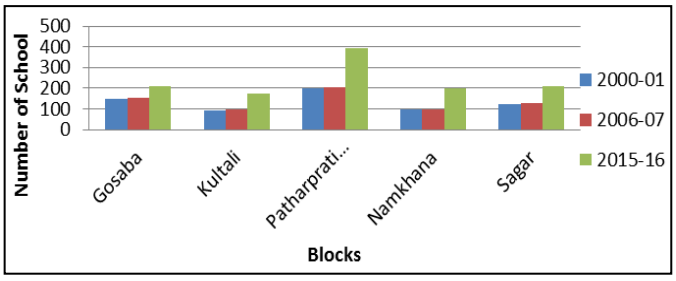

Fig 3: Block and year wise no. of school

Available Physical Facilities in Primary School

Playground

The situation regarding availability of playground in the school is far from satisfactory particularly in western two blocks (Table 2). It is to be noted that more than 50% schools has no playground. It is understandable that lack of availability of playground hampers primary education of children daily. The availability of playground is better in eastern region than western region. The data shows that development of play ground was very slow during 2012-2016. The playground infrastructure of primary schools of Sundarban Coastal Area is not good as compare to national level (57.58%).

Table 2: Percentage share of school with play ground

Blocks/ Year	2012-13	2013-14	2014-15	2015-16
Gosaba	42.6	42.7	43.6	46.2
Kultali	41.6	42	40.6	43.6
Patharpratima	23.5	25	24.8	26.6
Namkhana	35.2	36.9	37.6	36.4
Sagar	23.4	24	26.9	27.4

Boundary Wall

It is also noteworthy that although most of the schools are running functioning in a building but many of these schools are found without any boundary wall. It is disheartening that around 76% school do not have any boundary wall as per the estimation of DISE in 2015-16 (Table 3). The situation is slightly better in the Gosaba block though around 69.5% schools still require boundary wall. The following data shows that the situation was very bad in 2012-13 but it is improving.

Table 3: Percentage share of school with boundary wall

Blocks\Year	2012-13	2013-14	2014-15	2015-16
Gosaba	21.1	26.5	29.9	30.5
Kultali	14.3	19.8	22.4	25
Patharpratima	13.1	17.1	17.8	18.4
Namkhana	13.5	15.9	18.8	19.7
Sagar	14.4	17.3	21.2	22.6

Girl's Toilet

According to the DISE data (Table 8), it has been found that average 97% primary schools are providing girls' toilet facility in 2015-16 where as in the 2012-13, the situation was like that average 75% schools could provide girls toilet. However, only Gosaba and Namkhana blocks have all primary schools which are providing girl's toilet.

Table 4: Percentage Share of Schools with Girls' Toilet Facility

Blocks/Year	2012-13	2013-14	2014-15	2015-16
Gosaba	73.2	64.9	70.6	100
Kultali	73.9	59.3	75.2	96.5
Patharpratima	82.2	75.8	88	97.7
Namkhana	82.4	80.5	86.3	100
Sagar	67	62.3	68.7	95.7

Boy's Toilet

Provisioning for boys' toilet facility has been much better as compared to girls' toilet at every level and irrespective of the management of schools. It is also noticeable that the proportion is much better in case of private aided schools (Table 5). Despite this, some of the states require further attention such as Bihar, Meghalaya, Andhra Pradesh and Assam which fall in the category of below 80% of government schools with boys' toilet facility. It has been found that 22 states at primary level, 21 states at upper

primary level and 17 states each at secondary and higher secondary level have more than 90% government schools with boys' toilet facility in it.

Table 5: Percentage Share of Schools with Boys' Toilet Facility

Blocks/Year	2012-13	2013-14	2014-15	2015-16
Gosaba	69.4	94.3	95.5	100
Kultali	37.3	89.5	97	97.1
Patharpratima	54.4	95	99.5	99.7
Namkhana	44	98.5	98.5	99.5
Sagar	38	89.9	93.4	100

Drinking Water

With the help of DISE data (Table 6), an attempt can be made to see whether the school has been provided with drinking water facility or not. It has been found that as compared to government schools having functional drinking water facility, the situation is much better in private unaided schools. Since drinking water facility is one of the essential facilities, urgent action is required in this regard. This facility is more better in Patharpratima and Namkhana and Sagar than other two blocks.

Table 6: Percentage Share of Schools having Functional Drinking Water Facility

Blocks/Year	2012-13	2013-14	2014-15	2015-16
Gosaba	91.9	92.4	92.9	93.8
Kultali	93.8	93.8	92.7	95.3
Patharpratima	97.8	97.4	98.2	98.7
Namkhana	97.4	98.5	99	99
Sagar	95	96.2	96.7	96.7

Electricity

Electricity facility is one of the important initiatives that require collective decision of at least two departments such as electricity and school department in the state. Sudarban Coastal area is facing from so much natural barrier. It has been found that despite having electricity in the village many schools are still devoid of electricity facility. However, it is heartening to see that only two blocks are there which have above 50% primary school with electricity facility. Another observation is that development of this facility really increased in between 2012 and 2016 (Table 7).

Table 7: Percentage Share of Schools with Electricity Facility

Blocks/Year	2012-13	2013-14	2014-15	2015-16
Gosaba	6.2	8.1	9.5	27.6
Kultali	3.7	5.6	9.7	59.3
Patharpratima	3	4.5	7.3	42.5
Namkhana	13	20	23.9	44.9
Sagar	3	5.3	8.5	62.7

Computer

It has been found that only 13% government primary and 37% government upper primary schools have computer facility in national perspective (Table 8). In the study area computer facility is very poor in primary schools. Above 95 % schools have no computer facility.

Table 8: Percentage Share of Schools with Computer facility

Blocks/Year	2012-13	2013-14	2014-15	2015-16
Gosaba	1.4	1.4	1.4	1.9
Kultali	1.9	1.9	2.4	3.5
Patharpratima	2.5	1.8	2.1	2.8
Namkhana	2.6	3.1	3.6	4
Sagar	1	2.4	2.8	3.8

Ramp

One of the major objectives of all education programmes that have been implemented at present is to develop an inclusive education system by providing access to children with disabilities. Provisioning of ramp facility is one of the indicators in this regard. It has been found in DISE 2015-16 (Table 9) that around 30-50 % schools are not providing any ramp facility at the primary level. The proportion of schools with ramp facility is much higher in Gosaba. Though there has been considerable lower facility in primary schools during last three years.

Table 9: Percentage share of Schools with Ramp Facility

Blocks/Year	2012-13	2013-14	2014-15	2015-16
Gosaba	28.2	65.9	70.6	71.9
Kultali	6.8	46.9	49.1	50
Patharpratima	4.1	50.5	51.4	54.5
Namkhana	7.3	47.2	47.7	47
Sagar	8	47.6	49	49

Kitchen Shed

This is most important for primary level student as per as health is concerned. It is used for making and distribution of cooking food in school. It is found in DISE report (Table 10) that almost 20%-40% schools have no kitchen facility. Maximum schools with kitchen shed facility are found in Patharpratima blocks but this facility is increased during 4 year.

Table 10: Percentage Share of Schools with Kitchen Shed Facility

Blocks/Year	2012-13	2013-14	2014-15	2015-16
Gosaba	56.9	58.6	51.2	63.7
Kultali	63.4	64.3	74.8	79.2
Patharpratima	70	70.6	81.3	87.4
Namkhana	57.7	58.8	70.1	75.7
Sagar	52.7	53.9	70.7	77.8

Student – Classroom Ratio

Student classroom ratio is another important factor covered under DISE to analyze the average number of students per classroom in a school. In the Table 11, data indicates that the primary schools have adverse SCR indicating overcrowded classrooms. It may be because of prevalence of small size elementary schools. The block and year wise data suggests that all blocks have lower proportion of government schools at elementary level than the national average (27). Out of these, Patharpratima and Nakhana have the highest SCR. Another scenario has been seen that SCR changed from 2012 to 2016. It may cause of number of classrooms increased.

Table 11: Percentage Share of Schools with Student-Classroom Ratio

Blocks/Year	2012-13	2013-14	2014-15	2015-16
Gosaba	39	30	27	24
Kultali	44	32	29	26
Patharpratima	27	20	18	16
Namkhana	26	20	18	17
Sagar	31	24	22	21

Comparison between Eastern Blocks and Western Blocks

There are differences among blocks in respect to development, transport, communication due to location. These blocks are categorised into two groups which are eastern side coastal blocks and western side coastal blocks based on above mentioned situation. Hazra also divided these blocks into two categories. Eastern coastal blocks comprise Gosaba, Kultali and Pathar Pratima and western side includes Namkhana and Sagar. It is hypothesized that there is no difference among infrastructure facilities between east and west side coastal blocks. Study shows that there is difference and east side blocks belong to high infrastructure quality than west side.

Table 12: Chi-square test

Region	Infrastructure Development Category										df	χ^2
	PG	BW	GT	BT	DW	ELC	COMP	RMP	KS	SCR		
East	44.9	24.6	98.06	98.93	95.93	43.13	2.73	58.8	76.76	22	9	48.3*
West	31.9	21.15	97.85	99.75	97.85	53.8	3.9	48	76.75	19		

*Significance at both 0.05 % and 0.01% level of significance.

Conclusion

The above discussion reveals that there has been gradual increase in number of primary schools. This indicates that increasingly implementation of SSA, RTE Act etc. and peoples are willing to send their children to schools in spite of natural and socio-economic barriers. However, the above data analysis indicates that due to many initiatives taken by government, some improvement has taken place in the government schools as well. It has been found that most of the government schools in this area have girl's and boy's toilets, drinking water. Similarly improvement has also been made in terms of electricity kitchen shed, classrooms, etc. However the situation is not that satisfactory if we look at availability of some other facilities such as boundary wall, playground, electricity and it is more challenging in case of availability of computer facility. Rather it is also a matter of concern that schools without electricity, playground, boundary wall, computer and constitute a large proportion of enrolment at the primary level indicating that a substantial proportion of learners are not accessing these facilities and that may have impact on their learning level.

The analysis indicates that there is slight difference between western side coastal blocks and eastern side coastal blocks as per as availability of infrastructure is concern in primary school. It is in this context further challenge still remains to provide a proper learning environment to all students by equipping all government schools with essential infrastructure facilities and to increase quality of education.

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