



# INVESTIGATING THE RELATIONSHIP BETWEEN INFRASTRUCTURE AND EDUCATIONAL ACHIEVEMENT IN PRIMARY SCHOOLS WITHIN BEGUSARAI DISTRICT.

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**Abstract:** This paper presents an in-depth investigation into the correlation between infrastructure quality and educational achievement in primary schools across Begusarai District. The study aims to elucidate how the condition of school facilities influences student learning outcomes. Using a mixed-methods approach, data was collected through surveys, interviews, and academic performance records. The findings reveal significant associations between infrastructure deficiencies and educational achievement disparities. Recommendations are provided to address infrastructure gaps and improve the overall quality of primary education in Begusarai District.

**Keywords:-** infrastructure quality, educational achievement, primary schools of Begusarai District.

## **Introduction:**

Primary education plays a pivotal role in shaping the academic trajectory and future prospects of children. The quality of educational infrastructure, including school buildings, facilities, and resources, is widely recognized as a critical determinant of student learning outcomes. In Begusarai District, where primary education faces various challenges, understanding the relationship between infrastructure and educational achievement is paramount. This paper investigates this relationship to inform policy and practice aimed at enhancing primary education quality.

## **Methodology:**

This study employs a mixed-methods research design to examine the relationship between infrastructure and educational achievement in primary schools within Begusarai District. Surveys were administered to school administrators, teachers, and students to assess perceptions of infrastructure quality and its impact on learning. Additionally, academic performance records were analyzed to quantify educational achievement indicators.

Semi-structured interviews with key stakeholders provided contextual insights into infrastructure challenges and their implications for student outcomes.

### Infrastructure Assessment:

The infrastructure assessment focused on evaluating the condition and adequacy of school facilities, including classrooms, sanitation facilities, libraries, and recreational spaces. Findings revealed widespread deficiencies, with many schools lacking essential amenities such as safe drinking water, functional toilets, and adequate classroom space. Substandard infrastructure was identified as a barrier to effective teaching and learning, contributing to student disengagement and underperformance.

**Table-1 (Physical Infrastructure availability)**

Infrastructure		Government	Government Aided	Private	Total
Building	Numbers of School	106	0	2	108
	Percentage	6.9	0.0	1.0	6.0
Office-Store-Head Master's Room	Numbers of School	1188	18	103	1309
	Percentage	77.0	40.9	39.3	72.9
One Class room for every teacher's	Numbers of School	1187	15	29	1231
	Percentage	76.9	34.1	13.9	68.5
Ramp	Numbers of School	658	38	115	811
	Percentage	42.6	86.4	55.0	45.2
Separate Toilet's for Boy's	Numbers of School	9	3	4	16
	Percentage	0.6	6.8	1.9	0.9
Separate Toilet's for Girl's	Numbers of School	7	3	4	14
	Percentage	0.5	6.8	1.9	0.8
Drinking Water Facilities	Numbers of School	19	1	0	20
	Percentage	1.2	2.3	0.0	1.1
Kitchen Room	Numbers of School	566	28	--	594
	Percentage	38.0	93.2	--	39.1
Boundary Wall	Numbers of School	745	3	23	771
	Percentage	48.3	6.8	11.0	42.9
Play Ground	Numbers of School	1130	31	179	1340
	Percentage	73.2	70.5	85.6	74.6

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The items in beginning were related to the condition of rooms in the schools. The responses obtained revealed that the overall condition of building and rooms was satisfactory. All the 500 schools were found to have their own "Pucca" buildings Forty eight percent were in very good condition. 37% of the rooms of the schools were

found to be in bad condition needed to be repaired. It was also found that 87% the rooms of the school buildings were airy and all had sufficient light. All the rooms had doors and satisfactory floors. But only 56% of the respondent said that the number of rooms in the schools was sufficient. All the schools (62.4%) had headmaster's room also. Similarly, only 50.3% said that the schools had their own boundaries and gates. 34.7% schools had ramps, but only few said that they had railing also.

The schools were said to be situated in peaceful environment by 64% of the respondents. Satisfactory number of schools (69%) had hindrance free approach roads, and all of them had supply of electricity and lighting arrangement. The availability of drinking water was found to be unsatisfactory; the dominant -source of water was the - hand pumps drinking water available was said to be fit for drinking. Only 4.6% of schools have adequate drinking Infrastructure. Teaching material such as chalk, duster, stationery, tat-patty etc. are said to be available in required quantity in addition to globes, maps, charts and other TLM. But most of the schools (87%) said that there was no sufficient furniture in the schools, and all of them said that there were no sufficient tables and chairs in the class of the schools. 38% said that black - boards were not in good conditions. There was unsatisfactorily (11.5%) arrangement for toilets in schools for students and they are also said to be in usable condition. There was a great paucity (7.1%) of separate toilets for girls and poor state of cleaning and watering. Almost half of the schools have playground (53.4%) and playing material which is used by 80% of the students.

It may be concluded from the forgoing observations that so far as infrastructure is concerned the condition-of primary schools in the district of Begusarai is not good. Rather it is much unsatisfactory. Only 28.2% schools have separate kitchen facility where mid-day meal prepared.

### **Educational Achievement Analysis:**

Educational achievement was assessed through various quantitative and qualitative indicators, including standardized test scores, grade retention rates, and dropout rates. Analysis of academic performance data revealed disparities in student outcomes across schools, with those facing infrastructure challenges exhibiting lower achievement levels. Factors such as overcrowded classrooms, poor sanitation facilities, and limited access to educational resources were found to negatively impact student motivation and academic success. Schools with good infrastructure reported a 20% higher average score in standardized tests compared to schools with poor infrastructure.

#### **1. Pass Rates:**

The average pass rate in schools with robust infrastructure was 95%, whereas schools with substandard facilities had an average pass rate of 75%.

#### **2. Extracurricular Participation:**

Students in well-equipped schools participated in extracurricular activities at a rate of 80%, significantly higher than the 45% participation rate observed in schools lacking basic amenities.

#### **3. Library and Digital Resources:**

Access to comprehensive libraries and digital learning tools contributed to improved student research skills and independent learning, reflected in higher overall academic performance.

#### 4. Laboratory Facilities:

Schools with modern laboratories showed a 30% increase in student interest and proficiency in STEM subjects compared to those without such facilities.

The analysis underscores the critical role of infrastructure in enhancing educational achievements in Begusarai District. Investment in school infrastructure not only boosts academic performance but also fosters holistic development, preparing students for future challenges. Policymakers should prioritize infrastructural improvements to bridge the educational disparity and ensure equitable learning opportunities for all students.

#### Relationship between Infrastructure and Educational Achievement:

The relationship between infrastructure quality and educational achievement was examined through statistical analysis and thematic synthesis of qualitative data. Correlational analysis indicated a significant association between infrastructure deficiencies and lower student performance. Qualitative insights further elucidated the mechanisms through which inadequate infrastructure undermines learning environments and hampers educational attainment.

#### Recommendations:

Based on the findings, several recommendations are proposed to address infrastructure gaps and improve educational achievement in primary schools within Begusarai District:

1. Prioritize infrastructure upgrades and maintenance to ensure all schools meet basic standards of safety and functionality.
2. Allocate resources equitably to address disparities in infrastructure across schools, with a focus on underserved communities.
3. Provide professional development opportunities for teachers to effectively utilize available resources and create conducive learning environments.
4. Foster community engagement and collaboration to mobilize support for infrastructure improvement initiatives and enhance school-community partnerships.

#### Conclusion:

In conclusion, this study underscores the critical importance of infrastructure quality in shaping educational outcomes in primary schools. By addressing infrastructure challenges and implementing targeted interventions, stakeholders can mitigate disparities in educational achievement and create inclusive learning environments conducive to student success. Ultimately, investing in infrastructure improvement is not only a matter of educational equity but also a catalyst for socio-economic development and prosperity in Begusarai District.

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