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Review Article

Impact of Educational Infrastructure on Gross Enrollment Ratio

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Abstract *- This paper analyses the impact of Educational Infrastructure on the Gross Enrollment Ratio of Upper-secondary Students in Government Schools by Analysing the UDISE Report of 2021-22 to identify the facility with the highest impact. Previous research has proven that education spending by the State and Central governments affects the States' educational outcomes. Among 17 major states of India, Bihar has spent a higher share of its GSDP on education between 2012-16. Less than 3% of the GSDP is allocated to education in the remaining states. The growth in education spending has been appalling, particularly since the Right to Education (RTE) Act. The states with an average expenditure of 2% are Uttar Pradesh (2.5%), Chhattisgarh (2.2%), and Madhya Pradesh (2%). Despite this active involvement in Education spending, certain factors play a more important role than others in determining educational outcomes. In this paper, the impact of infrastructure on the gross enrollment ratio was analysed.*

Keywords *- Gross Enrollment Ratio (GER), Education facilities, Infrastructure, Return on investment, Policies.*

1. Introduction

Due to its ability to facilitate learning and the development of skills and knowledge, education is crucial to socioeconomic growth. The United Nations' Sustainable Development Goal 4 aspires to ensure inclusive and equitable access to high-quality education and to encourage opportunities for lifelong learning for all people (Sabo, 2001). Education helps you realise your true potential, sharpen critical skills, develop Financial stability, foster equality and empowerment, and, in turn, support a developed society. (National Steering Committee for National Curriculum Frameworks, 2023)

The gross enrolment ratio is the percentage of all students, regardless of age, in groups whose population is formally thought to correspond to the education level presented. (UNESCO,2023) The gross enrollment ratio for schools is calculated by dividing the population of the age group that is legally regarded to be in formal education by the total number of students enrolled in formal education, regardless of age, and multiplying the result by 100. Gross enrollment ratios (GER) indicate each pupil's educational level's capability; however, a high ratio may indicate that many older pupils are enrolled in each grade due to repetition or late entry rather than the successful educational system. The net enrolment rate (NER), which excludes students who are underage and overage, is a better indicator of the system's coverage and internal efficiency. (UN Department of Economics and Social Affairs, 2004)

There is compelling evidence that good infrastructure contributes to improved instruction, higher student achievements, lower dropout rates, and other positive effects. 2019 (World Bank Group) From 99% at the elementary education level (age group of 5 to 9 years of age) to a severe drop of 26% at the higher education level, the gross enrollment ratio in India is shown to be declining (*School Education in India*, 2020). The CSF foundation's report examines potential new approaches to raise the figure. For instance, from 68% in 2010 to 43% in 2018, fewer pupils were able to answer a three-digit to one-digit division problem (CENTRAL SQUARE Foundation, 2018). Quantifiable factors that play a role in determining the gross enrollment ratio for a state are Population, Literacy rate (Association of Indian Universities, 2020), Gender parity (Pokhriyal, 2020), Educational expenditure ("The Impact of School Infrastructure on Learning," 2019)Availability of educational institutions per defined area (Baliyan, 2020), Educational policies ("How Scholarships Are Stabilising India's GER," 2023), Public awareness and outreach programs ("Why Mother Language-Based Education Is Essential," 2022)

The paper addresses an important question about the educational infrastructural facilities that yield the highest return on the investment of Government Funds in Government Schools regarding higher gross enrollment of students in those schools. It is extremely vital to study enrollment in government schools since they play a large role in the total enrollment ratio. According to a study conducted that claims the rise in enrollment at government institutions accounts for 80% of the total enrollment increase (International Journal of Innovative Science and Research Technology, 2019). This may be a sign that more children from lower socioeconomic categories attend school, as they tend to favour public institutions due to their accessibility. This could also point to government schools' circumstances getting better, which would lead to more

students enrolling there than at private institutions. According to the research, public spending significantly impacts student enrollment.

2. Methodology

This research is aimed at finding a degree of association between the infrastructure facilities in government schools and their impact on the Gross Enrollment Ratio. Government schools assess the critical phase of education before a student enters higher education or vocational training. (Pathak, 2020)

The research examines the various elements that affect how schools are equipped in each state and how that relates to the gross enrollment ratio.

All data for the research has been derived from the UDISE+ Report for the year 2021-22 with Non-probability-based sampling using statistical analysis and literature reviews. This is relevant for the research since the report collates data from all 14,89,115+ schools (UDISE, Mehta, and MEHTA, 2021-22) that exist across India. The research focuses on upper secondary education in India. Focussing on the upper secondary classes allows researchers and policymakers to assess the quality of education provided at that level and pinpoint areas of improvement. It also provides insight into the impact of existing policies due to the prolonged academic career of a student before they enter Upper secondary education.

Data analysis is done by deploying regression and correlation. The paper uses grounded theory, which aims to generate theories or concepts from the data itself while performing Content Analysis and Thematic Analysis to identify district, investment, policy, etc. related trends' impact on the Gross Enrollment Ratio. (Heydarian, 2016)

3. Results and Discussion

The top 5 and bottom five states are discussed in the graphs for the Percentage of Schools with electrical facilities in Government educational institutions.

In Figure 1, One may observe the diversity in the number of schools in each Indian state that have access to electricity. It can be seen that just 16.2% of Meghalayan schools have access to electricity, compared to 100% of schools in Delhi, Goa, Punjab, and Tamil Nadu. Access to electricity is crucial as it enables lighting, audio-visual aids, computers, and internet connectivity. It can facilitate longer study hours, enhance interactive learning methodologies, and broaden the range of educational content exposure. According to the UDISE data from 2021-22, around 86.6% of schools have electricity connections.

States with progressive policies in infrastructure for education facilities tend to have higher percentages of schools with electrical facilities. Tamil Nadu's "Samagra Shiksha Abhiyan" and Gujarat's "Shala Praveshotsav" work to improve such infrastructure. (Best Practices in Social Sector: A Compendium 2023, 2023)

Economic indicators such as the GDP of states like Delhi's revenue expenditure grew by 15%, and Goa the capital outlay grew by more than 85% during the year's state survey expenditure in 2020-21 from 2019-20. The GDP plays a role in determining the state's financial resources, thereby influencing investments in infrastructure. (Tiwari, 2021). The lack of electrical facilities in Remote and hilly terrains poses logistical challenges and may require additional investments for electrification, such as in Meghalaya, Manipur, Arunachal Pradesh, Tripura, and Nagaland. (Development of Power Sector in North-Eastern Region, 2011)

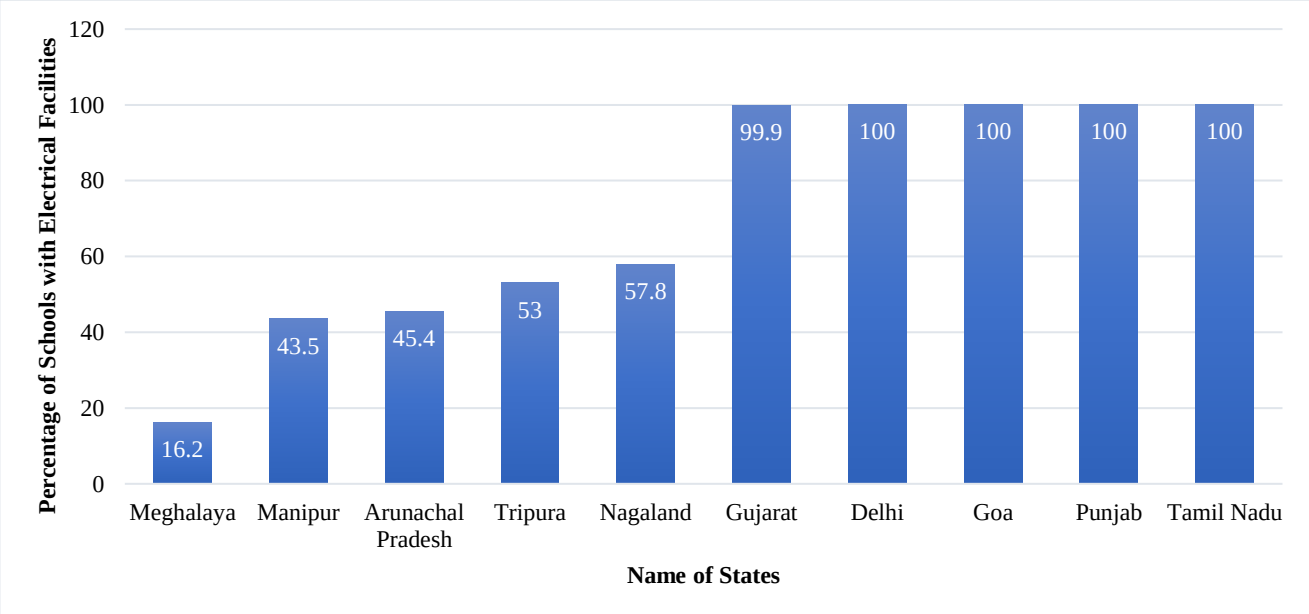

Fig. 1 Top 5 and bottom 5 states with the percentage of schools with (functional) electricity facilities in India

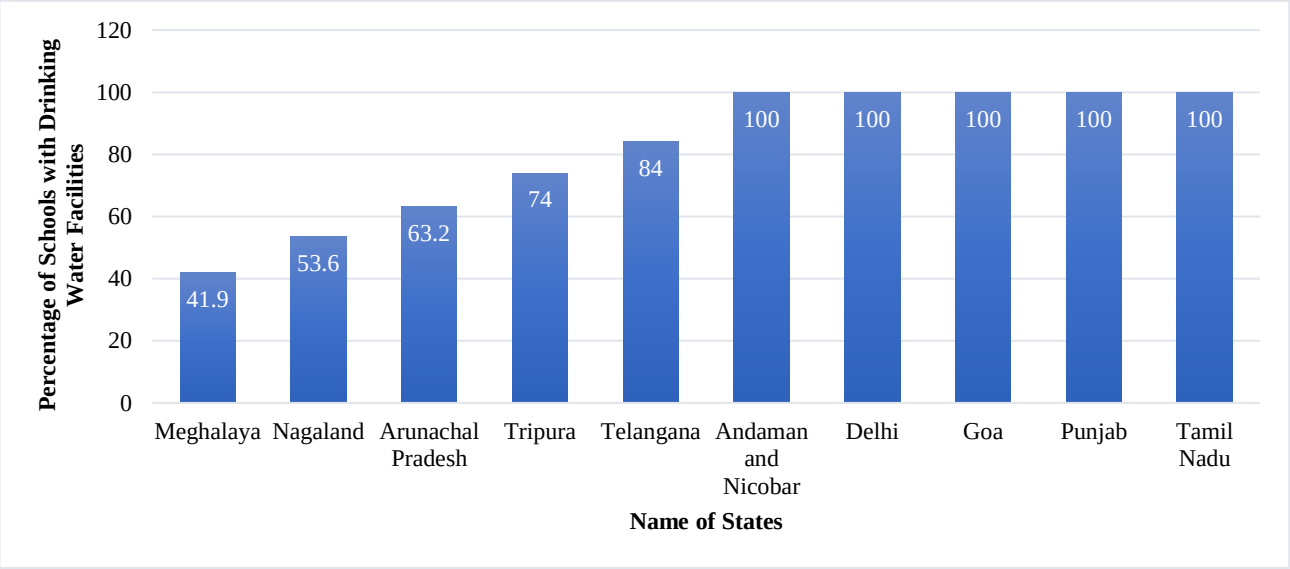

Fig. 2 Top 5 and bottom 5 states with the percentage of schools with drinking water facilities in India

In Figure 2, One can observe the diversity in the number of schools in the various Indian states that have access to drinking water. It can be shown that just 41.9% of Meghalayan schools have access to drinking water, compared to 100% of schools in the Andaman and Nicobar Islands, Delhi, Goa, Punjab, and Tamil Nadu.

In order to ensure excellent health and cleanliness, prevent dehydration and waterborne infections, and promote good hygiene, access to drinking water facilities is essential. In rural India, there was drinking water available in 47.9% of government schools as of 2019, up from 42.9% in 2018, according to the Annual Status of Education Report (ASER) 2019. According to a 2018 study by UNICEF and the Ministry of Drinking Water and Sanitation, schools without drinking water facilities enroll students at a 10% lower rate than those that did have (UNICEF). The Department of School Education and Literacy, Ministry of Education, Government of India's "DISE Flash Statistics 2018-19" report indicates that schools in states like Kerala and Tamil Nadu, which have higher drinking water facility coverage, tend to have higher GERs compared to states with lower coverage. (UDISE, 2018-19)

There is a lack of structured policies in the states like Arunachal Pradesh, Tripura, and Nagaland. Under the National Rural Drinking Water Programme (NRDWP), the State Level programme for funds available for different components is as follows:

10% for O&M with a 50:50 cost-sharing basis between Centre & State. 20% for sustainability on a 100% Central share basis. 45% for coverage and 20% for water quality on a 50:50 cost-sharing basis. 5% for Support activities. (*Accelerated Rural Water Supply Programme*, 2022)

States that do have policies in place, such as Meghalaya's School Water and Sanitation (SWAS) policy, focusing on providing safe drinking water to schools. They have been unsuccessful, as close to 40% of the people are still struggling (NE NOW NEWS, 2022) to get drinking water to date. Telangana's Integrated Water, Sanitation, and Hygiene (I-WASH) program aimed to improve facilities but has failed to provide even groundwater. They have revised the tariff being charged to add to the people's woes. (Mungara, 2023).

In contrast, Delhi's School Water and Sanitation Policy, Punjab's initiatives like the Punjab Safe School Water, Sanitation, and Hygiene (S4) program, and Tamil Nadu's comprehensive water management policies prove to be more effective. The high income per net capita and higher GDP support the cause. (*State of Urban - Water and Sanita on in India*, 2017)

Scattered population density, difficult terrains and remote locations of schools make it difficult to create adequate water infrastructure. Andaman and Nicobar Islands' geographical advantage and focus on water infrastructure contribute to their higher percentage. (AECOM India Private Limited, 2021)

In Figure 3, One may observe the diversity between Indian states in the proportion of schools with boys' toilets. It can be shown that just 57.8% of Telangana schools have boys' toilets, whereas 100% of Delhi schools have boys' toilets.

Amongst the factors, the lack of adequate policies plays a disproportionate role in determining the provision of boys' toilet facilities in government schools across India. For instance, Telangana's Swachh Telangana Swachh Patashala (Clean Telangana Clean School, n.d.) program aims to improve sanitation facilities but faces budgetary constraints (Dutta & Bhaskar, 2017). States such as Delhi have stronger policies, such as the Mukhyamantri Shiksha Saarthi Yojana (Chief Minister's Education Partner Scheme, 2018-19) ("Mukhyamantri Sarathi Yojana," 2022), which provides

financial assistance for school infrastructure development, including toilets. Goa's School Development Plan focuses on infrastructure development, resulting in improved sanitation facilities. (Systematic School Improvement Program, n.d.) Additionally, The GDP of a state determines the investment capacity, while the population density and school density influence the provision of boys' toilets.

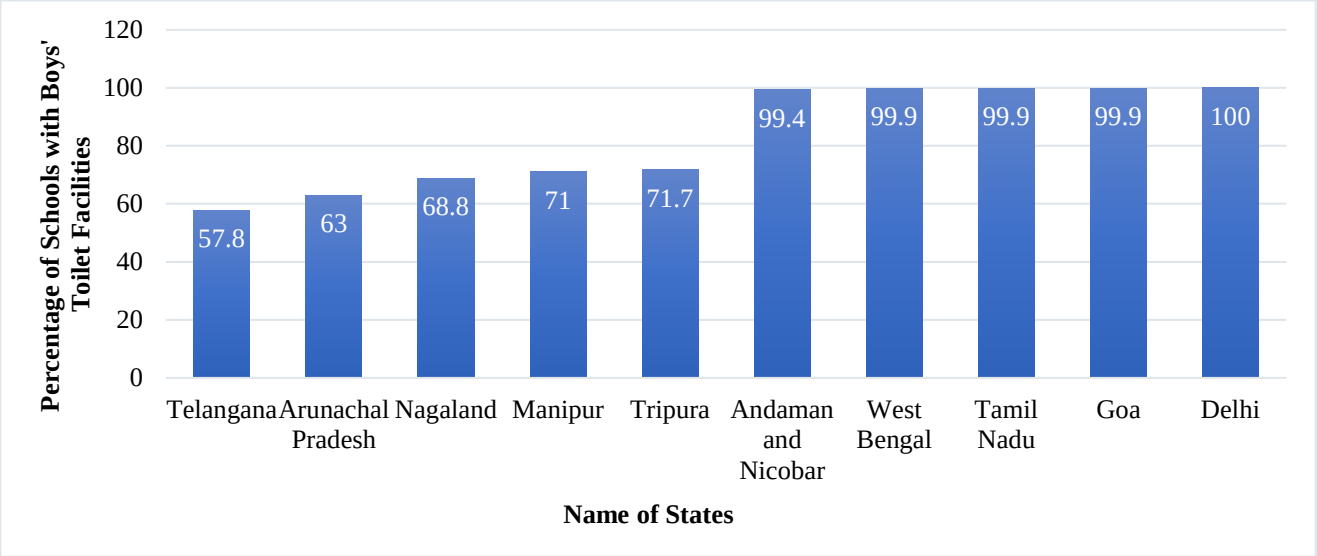

Fig. 3 Top 5 and bottom 5 states with percentage of boys' and co-educational schools with boy's toilet facilities in India

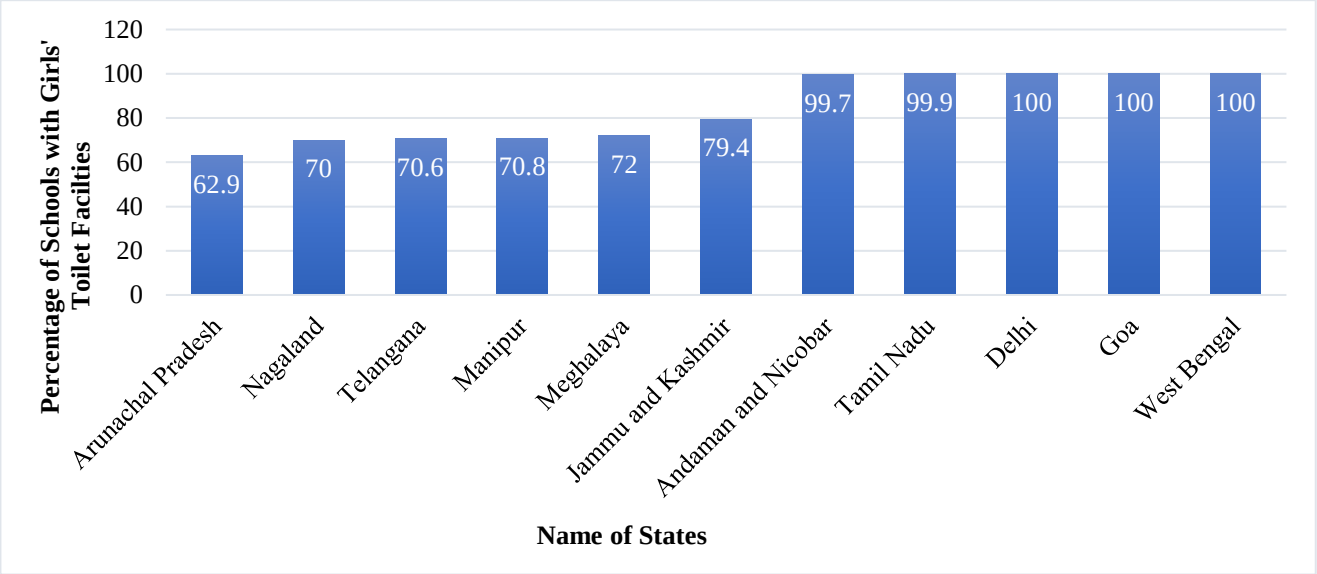

Fig. 4 Top 5 and bottom 5 states with percentage of girls' and co-educational schools with girl's toilet facilities in india

In Figure 4, One may observe the diversity in the number of schools in different Indian states with girls' toilets. It can be shown that just 62.9% of schools in Arunachal Pradesh have girls' toilets, but 100% of schools in Delhi, Goa, and West Bengal have girls' toilets.

The notable disparities occur due to the presence and absence of policies and investments. The "Swachh Bharat Swachh Vidyalaya" campaign runs in the state of Odisha, emphasising the construction of separate toilets for girls. In contrast, the state of Goa has actively promoted the "Girls' Toilet" scheme. More regional programs like West Bengal's "Kanyashree Prakalpa" initiative aim to provide basic sanitation infrastructure, including girls' toilets. (*Swachh Vidyalaya Programme*, 2022)

Delhi and Goa, being economically prosperous states in comparison to states like Manipur and Meghalaya, are able to construct and maintain a high rate of schools with girls' toilets.

The percentage of boys' and girls' toilet facilities is an essential metric to assess the sanitation infrastructure in a particular state's educational institutions. Along with being essential for dignity, privacy and health, access to proper toilet facilities for girls in schools is crucial for their safety as well. (UDISE, 2022)

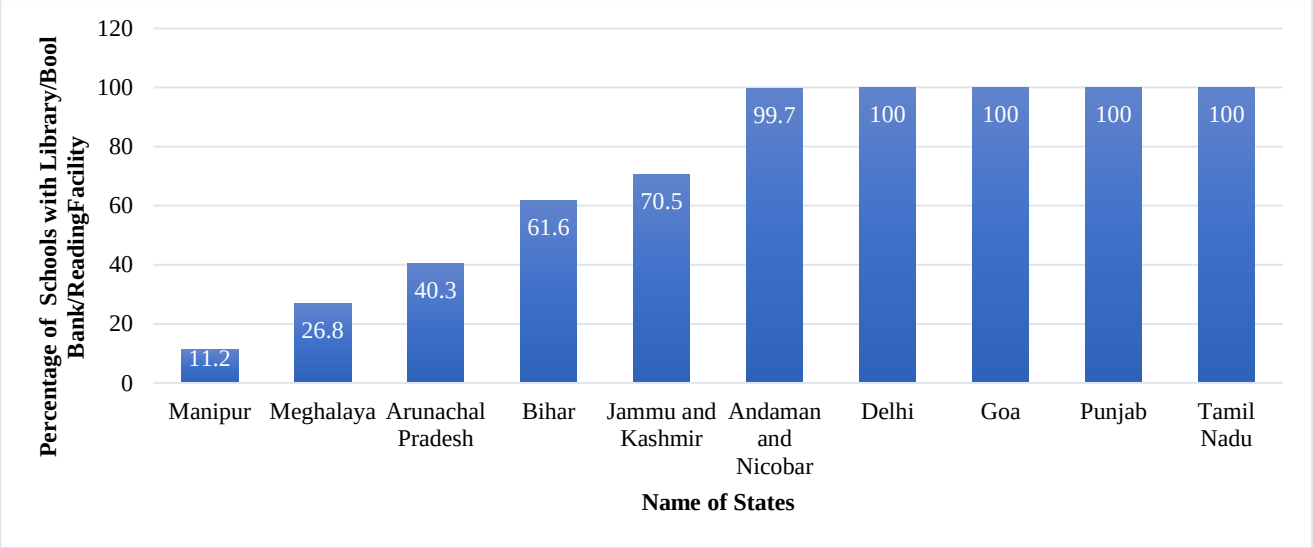

Fig. 5 Top 5 and bottom 5 states with percentage of schools with library/book, bank/reading corner facility in india

The data from the District Information System for Education (DISE) for the year 2019-20 indicates that states like Tamil Nadu and Kerala have a higher percentage of schools with boys' toilet facilities, resulting in better Gross Enrollment Ratios (GERs) compared to states with lower coverage compared to other states where there are lower attendance rates observed. The issue lies in separating lavatories between genders to ensure safety; since about 65% of schools across India have toilets and even fewer have divided toilets, the overall enrollment rates of girls are lower than boys.

In Figure 5, One can see the difference between the percentage of schools having Library/Book Bank/Reading Facilities present in Indian states. It can be observed that only 11.2% of schools in Manipur have Library/Book Bank/Reading Facilities, while Delhi, Goa, Punjab, and Tamil Nadu have Library/Book Bank/Reading Facilities present in 100% of schools.

According to National Literacy Trust research, having a library on campus—especially one that is well-stocked—increases the likelihood that kids will succeed academically and develop stronger critical thinking abilities. Further, it can be seen from the National Achievement Survey that schools with well-equipped libraries have a role in encouraging improved learning, according to the Department of School Education and Literacy. According to the findings, 91% of schools in high-achieving states have libraries, compared to 62% of schools in low-achieving ones. Recently, efforts have been seen by the government to better such infrastructure; under 'Padhe Bharat Badhe Bharat', an annual library grant has been provided in all Government schools to inculcate reading habits among students of all ages and strengthen school libraries. Along with this, there are provisions for an age-appropriate series of books to be provided - 'Bulbul' for Pre-primary and Primary classes, 'Mynah' for Upper Primary and 'Koel' for Secondary.

Comprehensive policies in Delhi, Goa, Punjab, and Tamil Nadu facilitate focused investments in education. Delhi's Education Department implemented a highly successful scheme called the "School Libraries Scheme" in 2018, in which the department allocated INR 20,000 (approx. $270) per school for library development, while Goa launched the "Library Grant Scheme," providing INR 1 lakh (approx. $1,350) for the development of Library infrastructure to each school. Punjab's success in this field was largely due to the "Padho Punjab, Padhao Punjab" initiative that emphasises the setting up of libraries in schools (Demand for Grants 2022-23 Analysis: Education, n.d.). The flagship program by the government, Sarva Shiksha Abhiyan (SSA), aims to improve infrastructure and educational resources in schools, including establishing and developing libraries. On the contrary, the School Library Program introduced by Manipur's Education Department struggled for effective implementation due to resource constraints. (India Education Diary, Manipur, 2022). The lack of funding in Bihar's "Library Policy", aimed at establishing libraries, is another example.

In Manipur, Meghalaya, Arunachal Pradesh, Bihar, Jammu and Kashmir, the low GDP allocation to education could be a reason.

In Figure 6, One may observe the diversity between Indian states in the percentage of schools that performed medical examinations during the most recent academic year. In Goa, medical exams were performed in only 12.3% of schools during the previous academic year, whereas in Tamil Nadu, exams were performed in all schools during the previous academic year.

Regular medical check-ups play a crucial role in the early detection and prevention of diseases, ensuring a healthy learning environment and promoting overall student well-being. Yet, a large portion of the student population still remains underserved. Gradually shifting focus to the promotion of health check-ups, the government has

launched various comprehensive healthcare initiatives such as the Rashtriya Bal Swasthya Karyakram (RBSK) and the Ayushman Bharat scheme (Ministry of Health & Family Welfare, Government of India, 2021). The Union Health Ministry also directs post-graduate medical college students in states like Delhi to conduct check-ups in government schools in partnership with the National Medical Commission (NMC). According to the Annual Status of Education Report (ASER) 2021, 51.6% of government schools conducted medical check-ups in the last academic year, representing a slight increase from 49.3% in the previous year. Medical check-ups have a vital impact on the early detection and prevention of medical complications, further promoting higher retention rates and attendance (ASER, 3).

State and central Policies on medical health in states like West Bengal, Karnataka, Gujarat, Andhra Pradesh, and Tamil Nadu have proven beneficial in increasing the percentage of medical check-ups. The "Swasthya Sathi" program is a great example of a program implemented in West Bengal to ensure comprehensive health coverage for students, leading to a higher percentage of schools conducting medical check-ups. (Department of Health & Family Welfare, 2016) The "Navachetana" initiative in Karnataka works specifically in preventive healthcare at a school level, thereby resulting in a higher rate of check-ups. (Vyas, 2012) Similar programs are seen contributing to their respective states' higher percentages. Gujarat's "School Health Programme" (The Indian Express, 2021) and Andhra Pradesh's "Arogya Raksha" scheme (GK Today - Andhra Pradesh, 2017) are great examples of states leveraging national programs (Mazumdar, 2016). Insufficient policies, limited medical infrastructure and constrained resources reduce the medical check-up rate in Goa, Bihar, Himachal Pradesh, Manipur, and Nagaland. (Ministry of Health & Family Welfare, n.d.) West Bengal, Tamil Nadu and Gujarat are some states seen investing a significant portion of their GDP in health and education sectors, which further promotes this figure.

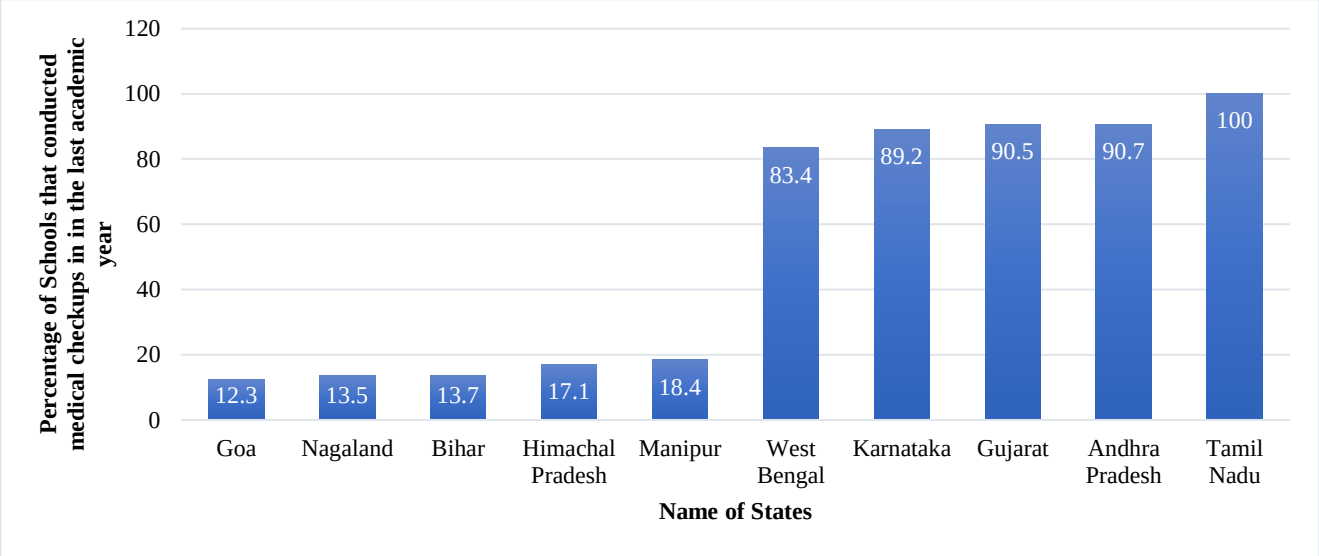

Fig. 6 Top 5 and bottom 5 states with percentage of schools that conducted medical check-ups in the last academic year in india

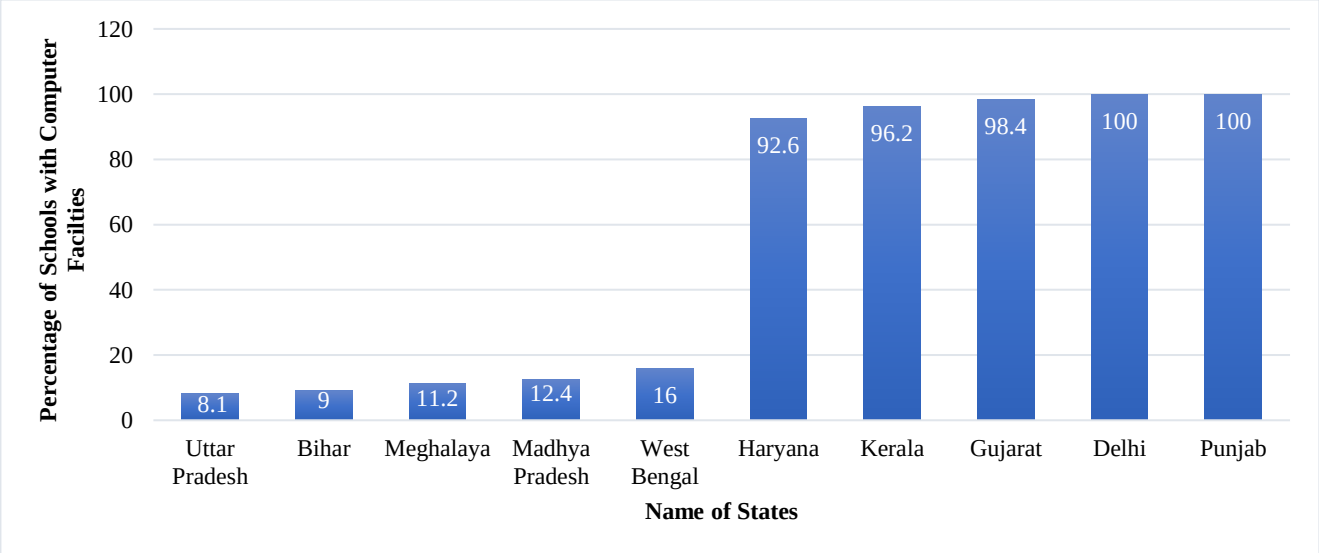

Fig. 7 Top 5 and bottom 5 states with percentage of schools with computer facilities in india

Figure 7 shows the variation between the Percentage of Schools with Computer Facilities in Indian states. It can be observed that only 8.1% of schools in Uttar Pradesh have Computer facilities, while Delhi and Punjab have Computer facilities in 100% of schools.

Despite the importance of developing digital literacy amongst students, the percentage of government schools with computer facilities in India remains a matter of concern. As per the Annual Status of Education Report (ASER) 2019, only 35% of government schools in rural India had computer facilities, indicating a minimal improvement from the previous year's 32%. Moreover, research suggests that schools with computer facilities tend to have higher enrollment rates and better learning outcomes since they acquire essential digital skills and competencies ("Annual Status of Education Report (ASER) 2019," 2020). Research also suggests that it leads to better quality job placements, and those without are handicapped in the modern job market, especially against their private school counterparts, with an average of 64% of schools with computer facilities. (OECD, 2016), Innovating Education and Educating for Innovation, OECD Publishing, Paris, 2016) To benefit this cause, ICT labs are being set up in government schools as a component of Rashtriya Madhyamik Shiksha Abhiyan (RMSA) (NIC, Ministry of Electronics & IT, Govt. of India 2018).

Progressive policies such as the "Delhi Education Technology University Act" and "Mission Buniyaad" program in Delhi (ABP LIVE, 2023) have made a significant impact on digital education infrastructure. The government of Kerala has also prioritised computer facilities in their schools with projects like the "IT@School" project. (*IT@SCHOOL - Impact Study*, 2010)

States like Gujarat (Sharma, 2023) and Haryana, with higher GDP and educational investment figures, have allocated substantial resources for computer facilities and digital education, unlike Bihar 18.3%, with a relatively lower GDP.

Population density negatively impacts the installation of computer facilities. (National Family Health Survey - The Health Ministry, 2020) Uttar Pradesh faces this issue despite adequate investment due to the vast population and numerous schools.

Figure 8 shows the variation between the Percentage of Schools with Internet Facilities in Indian states. It can be observed that only 5.9% of schools in Bihar have Internet Facilities, while Delhi has Internet facilities in 100% of schools. Hence, It can be observed that the states with the lowest percentage of schools with Internet facilities are present in the Northern and South-Eastern Regions of India, with the exception of Mizoram.

The internet has become an integral part of education, enabling students to access vast amounts of information, engage in online learning platforms, and develop digital literacy skills (Sengupta, 2018). By 2020, at least 26 billion sensors and devices will be connected to the internet, ushering in an era of artificial intelligence that is already reshaping how humans view the world. It is crucial to create a framework that will provide nations, governments, organisations, and individuals with a strong base to manage this transformation as technologists and researchers prepare for the future of digitisation. Despite this concern, the Ministry of Education reports that the percentage of government schools with internet facilities decreased from 38.7% in 2020 to 36% in 2021 despite various government initiatives such as Digital India and BharatNet. The contribution of the Services sector in Gross Value Added (GVA) at the current prices declined during 2020-21 over the year 2019-20, which is the possible impact of the Covid-19 outbreak. (Ministry of Labour and Employment, 2022)

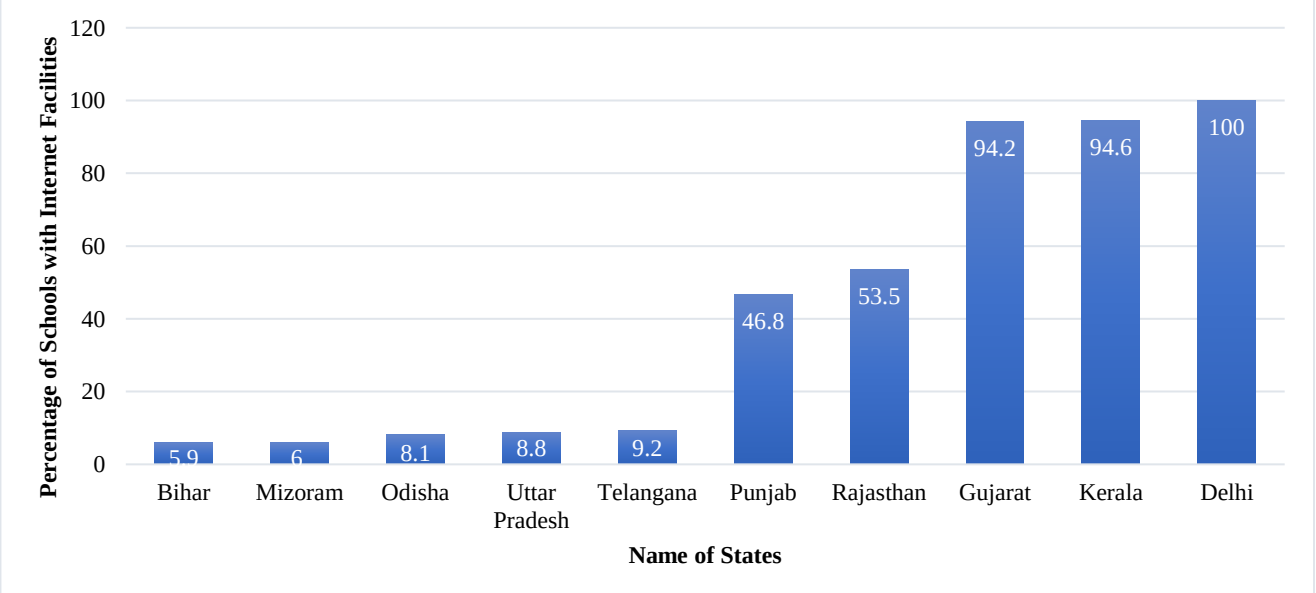

Fig. 8 Top 5 and bottom 5 states with percentage of schools with internet facilities available in india

Access to the Internet is not an independent infrastructure. It requires heavy investment in electrification, data conductivity, etc. States like Mizoram face challenges in infrastructure development due to its hilly terrain. Other policies and programs, such as the "Odisha Statewide Area Network" initiative (Government of Odisha, 2023) by the Odisha government, fail to provide the adequate infrastructure required to boost connectivity.

Despite this, reports indicate a consistent rise in government funding for the ICT industry from the state's total consolidated fund from 2011–2012 to 2015–2016. However, the government's ambitious goals for the future and the enormous potential for ICT expansion are insufficient. The state only spends a pitiful 0.21 percent of the whole consolidated fund on the IT industry.

This does not match the ambitious expansion plan (Dhal, 2020). While the "Digital Telangana" program has made an insufficient amount of progress. Telangana has 27,425 schools, of which only 2,408 schools have internet connectivity (Roopi, 2021).

However, proactive policies such as Delhi's "Mission Buniyaad" (Agrawal & Arnimesh, 2022) and Kerala's "Hi-Tech School" program are successful due to high investments (Philip, 2020).

One of the most important factors is the lower GDP and limited resources, as seen in Bihar and Uttar Pradesh. However, Delhi, Kerala, Punjab, Gujarat, and Rajasthan are seen pioneering the instalment of internet facilities; one reason could be their higher expenditure on internet facilities.

In Figure 9, One can see the variation between the Gross Enrolment Ratio in Indian states. It can be observed that only 67.8% of eligible government school upper secondary students enrol in school, while in Meghalaya, Mizoram, Manipur, Arunachal Pradesh and Tripura, those numbers are significantly over 100%. Hence, it can be observed that schools in the North-eastern Territory have the highest gross enrollment Ratio due to the over-enrollment of students in outnumbered government schools across the region due to the lack of institutions in the region.

4. Correlation

After plotting the trends in various states, a correlation was done, and it was found that the factors that affected the gross enrollment ratio in states were the presence of computer facilities, the presence of internet facilities and tinkering labs. A correlation analysis was performed to check the degree of reliance.

The variable percentage of Government Schools with computer facilities in India and the Gross Enrollment Rate - higher secondary (total) was found to be positively correlated ($r = .39$, $p < 0.1$) with a weak correlation. Similarly, the variable percentage of Government schools with Tinkering Labs in India and the Gross Enrollment Rate - Higher secondary - was found to be a positive weak correlation ($r = .39$, $p > 0.05$).

The variable percentage of Government Schools with Internet facilities in India and the Gross Enrollment Rate - higher secondary (total) was found to be positively (UDISE, 2022) correlated ($r = .38$, $p > 0.05$) with a weak correlation. The gross enrollment ratio is seen increasing with an increase in percentage. Since a weak positive linear correlation is observed, it is possible that the hypothesis of equal weightage of all facilities does not stand true. It is possible that correlation is not the best metric since correlation does not indicate causation.

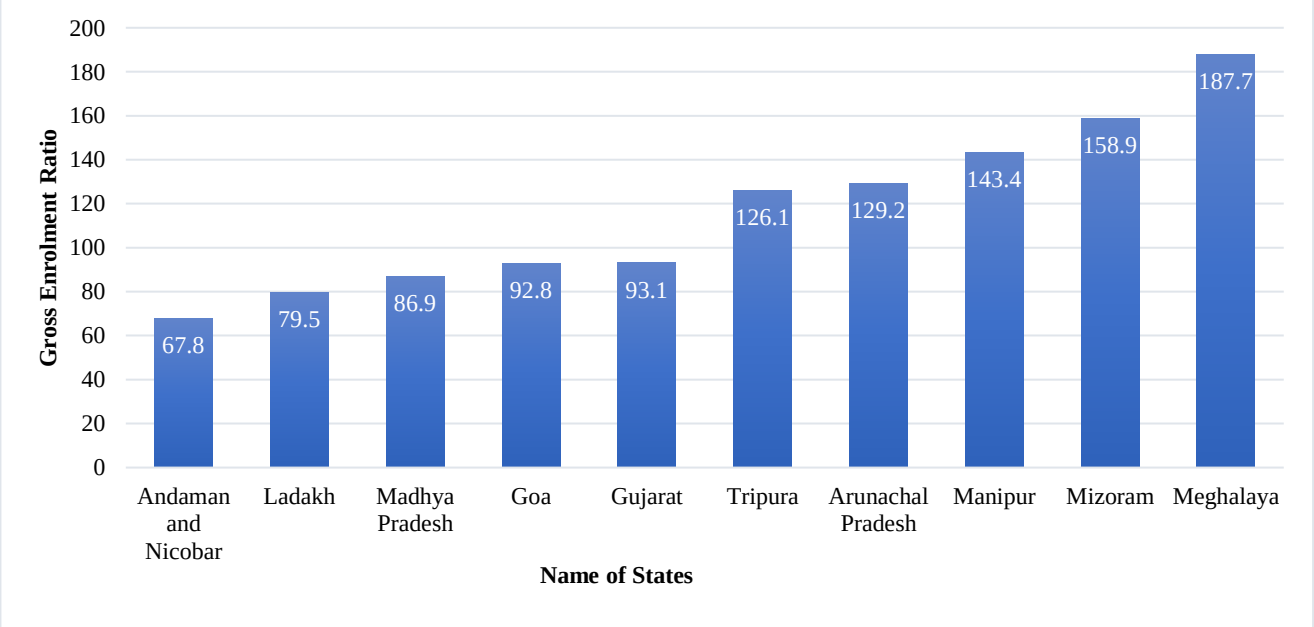

Fig. 9 Top 5 and bottom 5 states with gross enrolment ratio in india

Table 1. Correlation between computer facilities, internet facilities and tinkering labs in government schools and net enrollment in higher secondary schools

	Percentage of Government Schools with computer facilities in India	Net Enrollment Rate - Higher Secondary	P values
Percentage of Government Schools with computer facilities in India	1		0.005
Net Enrollment Rate - higher secondary (total)	0.39	1	
Percentage of government schools with Tinkering Labs in India	1		0.46
Net Enrollment Rate - higher secondary (total)	0.39	1	
Percentage of Government Schools with Internet facilities available in India	1		0.37
Gross Enrollment Rate - higher secondary (total)	0.38	1	

According to a study - that conducted an extensive study on the importance of IT technology on the education Enrollment Ratio in schools (*Gross enrolment ratio | UNESCO UIS*., n.d.), the availability and cost of ICT resources, teacher training in ICT, students' and teachers' attitudes toward computer use, and support from parents and the community are the main elements that influence ICT use. According to a different study, putting Digi-tech infrastructure in schools—including Internet and computer facilities—is hampered by inadequate infrastructure, inadequate technology, and a lack of sufficient and effective professional development. In addition to furniture arranged in clusters to accommodate groups of students, collaborative classrooms also need a robust Wi-Fi signal to guarantee students' accessibility to a variety of devices at all times. Similar to this, the existence of tinkering labs like the ATL tinkering lab aims to increase students' levels of interest, creativity, and imagination while also increasing gross enrollment ratios. (*ATL Tinkering Lab*, n.d.).

After performing correlation analysis, we saw the strongest statistical correlation between the percentage of Government Schools with Computer Facilities and Tinkering Labs in India. Since correlation is not causation, a regression analysis was performed to verify the findings and form reasoning for higher Gross Enrollment Ratios.

A linear regression analysis was conducted to predict the effect of the Percentage of Government Schools with computer facilities and Tinkering Labs on the Gross Enrollment Ratio in India (Table 1). The factor was found to be the most statistically significant. An association can be found between the Percentage of Government Schools with computer facilities and the Gross Enrollment Ratio in India (Table 3). $b= 5.590$, $t=3.033$ $p<05$.

This regression analysis shows positive causation between the presence of Computer facilities in government schools. Modern computer labs promote collaboration and advance course curriculum-based learning (NIC, Ministry of Electronics & Information Technology, Govt. of India. (2018). Both these activities are directed towards co-academic education outside of the traditional classroom.

Table 2. Regression between computer facilities and Tinkering Labs in government schools and net enrollment in higher secondary schools

Source	B	SE B	t	p
Percentage of Government Schools with computer facilities in India	5.590	1.84	3.033	0.005
Percentage of Government Schools with Tinkering Labs	1.684	2.26	0.744	0.463
R2				
F		0.00		

5. Conclusion

The limitations of the research are that the UDISE report used is for 2021-22. Hence, it could be outdated in terms of percentages. The research does not analyse all the factors that could play a role in determining the Gross Enrolment Ratio, instead focusing on 8 infrastructural factors only; it does not consider the External Validity and context of the data provided. It also focuses on Upper secondary education in Government Schools, leaving out the other grades and types of schools.

The existence of computer and internet facilities was determined to have the highest degree of causality among the eight infrastructural facilities examined in this article. In the 21st Century, computers and Internet resources are crucial to the lives of generations. Education is essential to addressing all the changes we encounter in our daily lives because society is changing so quickly. In order to engage the nation's youth in the nation's progress by accelerating the digital transformation of schools and colleges, the Indian government has made considerable advancements in the adoption of technology in the education sector (India Report Digital Education, 2021). Technology has unquestionably solved one of the government's major problems by providing excellent education to rural, tier 2 and tier 3 cities, enabling EdTech to operate by extending technology-enabled education, particularly in rural and remote places. Technology also allows decentralising education, which levels the playing field.

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