

Bridging the Digital Divide: An Empirical Study of ICT Integration in Rural vs. Urban Primary Schools in U.P. POST-NEP 2020

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ABSTRACT:

National Education Policy (NEP) 2020 strongly promotes for the merging of Information and Communication Technology (ICT) to enhance learning outcomes and widen access to quality learning. Though, its implementation within the various regional and socio-economic prospect of Uttar Pradesh (U.P.) has revealed significant disproportion. This survey explores the “digital divide ratio” between rural and urban primary schools in U.P., highlighting on the infrastructure related, teaching oriented and expertise-driven barriers to effective ICT integration. Implementing Hybrid research design, the study sampled 200 primary schools (100 rural, 100 urban) to evaluate their infrastructural availability, teacher’s digital literacy, and their interaction with Government portal such as DIKSHA.

The results highlight a significant disparity: while 80% of urban schools are provided with functional desktop computers and stable internet connectivity, only 25% of rural schools report similar capabilities, often depending on unstable mobile data networks. Moreover, in spite of Government funded training initiatives like NISHTHA, teacher’s digital literacy remains a significant challenge in rural areas. The study concludes by proposing policy recommendations, including the implementation of community specific disconnected databases, solar-powered digital infrastructure, and community-based digital hubs, to facilitate the balanced achievement of the NEP2020’s vision.

Keywords: AI-driven marketing; digital real estate; Bangalore; residential housing; market dynamics.

Introduction

Currently everyone is talking about learning. It is forcing education framework to review its technique of teaching. The NATIONAL EDUCATION POLICY 2020 in India served as a milestone.

The NEP 2020 changed the education system for the country. It wants to utilise information and communication technology or ICT throughout each level of schooling. Its target is to establish an advanced learning atmosphere in

which digital tools help to enhance abilities such as reading, writing, numeracy and calculations.

Transforming this vision in the reality relies on the infrastructure facilities of the state. Uttar Pradesh is the most populous state of India, so implementing the NEP 2020 is very complex. with their agricultural economy and disparities between rural and urban regions Uttar Pradesh is a crucial experimental ground for the NEPs digital directives.

This research examines the gaps between rural and urban primary schools in the post-NEP 2020 educational landscape. The digital divides are not about having devices but also about having good teachers who are ready to use technologies.

Infrastructural Access which means having devices, electricity and broadband connectivity.

Pedagogical Readiness which means teachers are proficient in using tools.

Platform Utilization which means using the states DIKSHA platform and e-content in teaching.

By analysing these criteria across 200 schools, this study aims to provide policymakers with actionable recommendation to bridge the gap and create a fair digital education environment.

Literature Review

When people talk about the divide in education they used to focus on hardware but now, they look at digital literacy and how technology is used. Back in 2004 Warschauer said the digital divide is not about having technology but about how people use it to empower themselves.

Before the NEP 2020 some studies in India showed that there were challenges in using ICT in schools. For example, a 2016 report said that than 20% of rural primary schools in India had functional computers and even fewer had internet access.

The COVID-19 pandemic made things worse. It showed that there were big disparities in digital access. According to a report in 2021 while more people in India had smartphones, access to education was still not equal.

The NEP 2020 wants to fix these problems with targeted interventions like creating a National Educational Technology Forum to guide technology use. Some people say that while the

NEP 2020 is a good idea it might make things worse if it does not fix the basic infrastructure problems in states like Uttar Pradesh. This study builds on these ideas by looking at data from schools in Uttar Pradesh.

Methodology

1. Research Design

This study adopts mixed methods approach. We conduct survey of primary school teachers to get data on infrastructure, internet connectivity and digital awareness, then we conduct some interviews to know about the problems in detail.

2. Participants

We chose 200 schools in Uttar Pradesh, included both rural and urban areas. We received some positive some negative responds from teachers and headmasters.

3. Data Collection Instruments

We used a questionnaire called the "ICT Readiness and Implementation Index (IRII)". It measured three things:

- **Infrastructure Accessibility** which means having internet, computers and reliable power supplies.
- **Teacher Digital Competency** which means teachers are proficient in using tools.
- **Pedagogical Integration** which means using tools in daily teaching.

Data Analysis and Results

We looked at the data. Found big differences between rural and urban schools.

1. Infrastructure Inequalities: Hardware and Connectivity

We found that rural schools do not have internet connectivity.

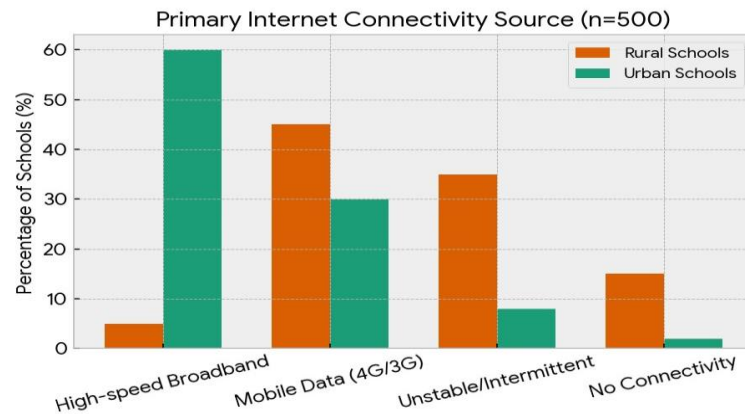


Figure 1: Comparison of Primary Internet Connectivity Sources (Rural vs. Urban)

5% of rural schools have high-speed broadband while 60% of urban schools have it. Many rural schools rely on data, which is not good for

education. Some rural schools do not have any connectivity at all.

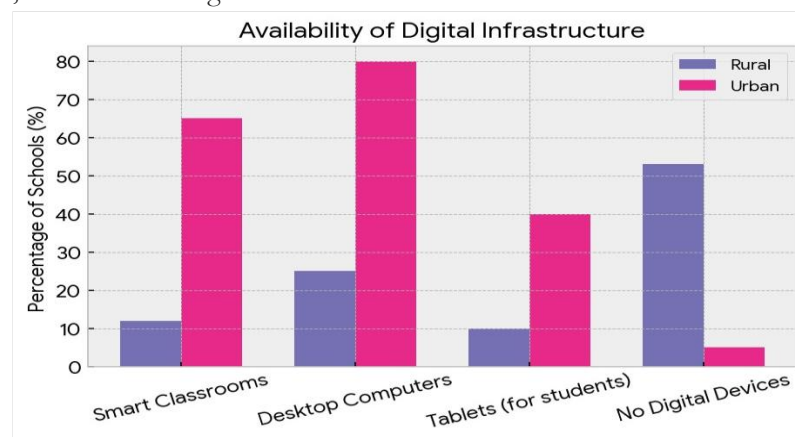


Figure 2: Availability of Digital Infrastructure by School Location

We also found that urban schools have digital devices than rural schools. While 65% of schools have smart classrooms only 12% of rural schools have them. Many rural schools do not have any devices for students.

2. Teacher Digital Literacy and Training Efficacy

The NEP 2020 relies on teachers to use tools. We found that many teachers in rural areas are not proficient in using digital tools.

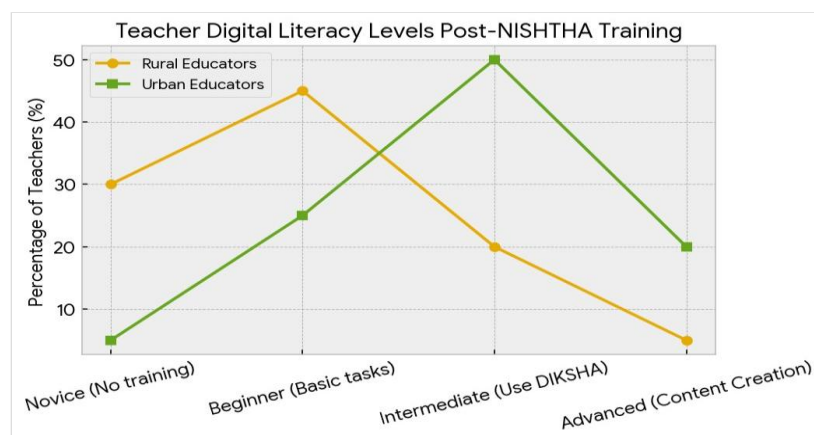


Figure 3: Teacher Digital Literacy Levels Post-NISHTHA Training

While 50% of teachers are at an intermediate level many rural teachers are still beginners. Some rural teachers do not know how to use tools at all.

Discussion

Our study shows that the NEP 2020s digital initiatives are not working well in Uttar Pradesh. The digital divide is still a problem. Rural schools do not have infrastructure and teachers are not proficient in using digital tools.

We think that policymakers should focus on fixing the infrastructure problems and providing training for teachers. We suggest creating community hubs using solar-powered technology and loading educational content onto offline servers. This step can help make digital education more accessible and equitable, for all students.

The study on teachers' awareness shows that initiative digital training programs like NISHTHA do not prove well for teachers in rural areas. Teachers living in urban areas learn easily from their training because of using devices in their daily life whereas the teachers living in rural areas cannot learn quickly because they don't use devices and technology in their daily lives and rural areas experience poor internet connectivity.

Policy Implications and Recommendations

Some changes should be made to make sure the National Education Policy 2020 works without facing the challenge of unequal education due to digital technology, following measures should be taken:

- We should have repositories that do not need the internet. Because the internet connectivity is not always working, we should put the DIKSHA curriculum on special servers or

networks in rural schools. This way teachers can always access digital content.

- We should have solar-powered classrooms. Because the power supply is not always working, we should use money from the Samagra Shiksha program to put panels in rural primary schools. We should make sure that at least one classroom in each school has a steady power supply.
- We should train teachers in a way that's practical and hands-on. We should not just train teachers online. Also have workshops in rural areas where they can learn how to use digital technology in a practical way.
- We should turn schools into digital learning hubs for the community. If we open these schools to the community after hours the local government can justify spending money on internet connections, which will help both the school and the community.

7. Conclusion

The National Education Policy 2020 is a step forward for education in India and it is right to focus on digital literacy and technology. Our study in Uttar Pradesh shows that we need to have good infrastructure in place for this policy to work. There is a difference between rural and urban primary schools when it comes to digital technology and this is a big problem.

To fix this problem we need to focus on solutions rather than just following general guidelines. We need to invest in technology that does not need the internet, solar power and training for teachers. Then can we make sure that every child in Uttar Pradesh benefits from digital technology and that the National Education Policy 2020 works for everyone.

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