

Reviving Government Schools in Rural India: Partnering with Edtech Can Pave the Way Forward

Mrinal Keshri

Independent Researcher, Mrinal Research

Abstract

The study aims to assess learning ecosystem in government schools in rural India and to develop management strategies for the revival of these schools. The article concerns the commercialization of education in India, with the number of private schools increasing, while declining number of government schools struggle to provide quality education. The COVID-19 pandemic has further exacerbated the situation, with a significant decline in basic reading and arithmetic skills of rural children.

The study was conducted in five aspirational districts in eastern India, with a sample size of 450 students. The study focused on three groups: experimental group 1, which had access to traditional classroom teaching, digital content, Android-based fun learning games, and a mentor at a district learning centre; experimental group 2, which had access to traditional classroom teaching, digital content, and fun learning games; and a control group, which had access to traditional classroom teaching only. The results showed that experimental group 1, which had access to premium digital content, fun learning games, and a mentor, had the highest learning outcomes. Linear regression analysis showed that the independent variables, Content App usage (%), Games Completion Rate, and Percentage of attendance at the district learning centre, were positively related to the Overall percentage score.

The study highlights the importance of improving the learning ecosystem of government schools in rural India, providing access to digital devices and internet connectivity, and including cost-effective edtech solutions vis-à-vis services. The study suggests that a combination of traditional classroom teaching, digital content, and fun learning games, along with a mentorship program, can lead to significant improvements in the quality of education in government schools. The study recommends that policymakers and stakeholders should work towards bringing about systematic changes in the education system in rural India.

Keywords- Education equity, government schools, commercialization of education, digital learning, rural India, learning outcomes

Introduction

Education is a Fundamental Right. Article 21-A in the Constitution of India provides the right to free and compulsory education of all children in the age group of six to fourteen years. Many students in government schools come from disadvantaged backgrounds, and may face significant socioeconomic

challenges that can impact their ability to learn. Additionally, there may be disparities in education quality between urban and rural areas, with rural areas often being underserved. Many teachers in government schools does not receive adequate training or professional development opportunities, which affects their ability to effectively teach students. Data also tells a shortage of qualified teachers in many areas, which leads to a high teacher-student ratio. The educational ecosystem has an inadequate educational infrastructure, creating a huge mismatch between demand and institutional supply. This problem is further compounded by increasing population. Considering the gap between urban and rural areas, it's alarming to see commercialization of primary education or education being a commodity (Centre, Annual Status of Education Report (Rural) 2022, 2023). It is leading to a situation where education is becoming a commodity that can be bought and sold, rather than a basic right accessible to all. Irrespective of the fact that our population increases and students' enrolment has been rising, number of government schools are declining and still struggling to provide quality education. Meanwhile, the number of private schools has increased (Literacy, 2022).

Apart from district schools (called Zila schools), there were private and semi aided schools which were run and administered by trust/communities. The majority of these institutions were known for their high-quality education. This has led to commercialization of education (AMBRISH DONGRE, 2014). It has exacerbated inequalities and skewed priorities among common citizens. Prevalence of private schools, lack of monitoring, limited financial budget/aids for government schools, low qualification for teachers and less monetary incentives creates an unpleasant educational ecosystem for students as well as teachers. Furthermore, differing attitudes of stakeholders towards the value of government schools make it difficult to align broader objectives.

In 2021, the Government of India has introduced National Education Policy (NEP) 2020. It also concerns the magnitude of learning crisis among initial grade students. As per the report, 36 crore kids are in age group 0-14 years. A large proportion of students currently in elementary school - estimated to be over 5 crores in number - have not attained Foundational Literacy and Numeracy (FLN) (Development, 2021). This is national average. Districts, which are part of this study, has significantly low FLN (3 out of 4 children lack FLN). Standard Operating procedures are yet to come for government departments and schools. Due to the scale of the current learning crisis, stakeholders are exploring all viable frameworks and research studies. Hence, this study captures grassroots learnings in order to propose a working model. Learning levels of children in rural India have been severely impacted by the COVID-19 pandemic, with a significant decline in basic reading and arithmetic skills (Centre, Annual Status of Education Report (Rural) 2021, 2022). Access to digital devices and internet connectivity remains a major challenge for rural households, hindering online learning opportunities for children. With the advancement of 4G/5G cellular network, Edtech has emerged as the proposed solution because it's easily scalable and cost-effective. The study aims to provide high quality research to influence policy and stakeholders in order to bring systematic changes. As blended learning is going to part of traditional classrooms, NEP 2020 emphasizes content creation, digital repository, and dissemination. The study proposes an evidence-based management strategies to maximize learning outcomes in government schools. Study also aims to initiate a dialogue between data and management strategies of government schools. This study is not and will not be associated to any organization, political party, union and other similar organizations. It is and will remain independent.

Methodology

The study was conducted in five aspirational districts (eastern states of India). Sample size is of 450 students from 15 different primary schools. 90 students of 6th grade from each district were part of the study for the duration of 6 months. Baseline exams were conducted for sample selection. Students, who were able to just clear the cut-off, became part of any category through random assignment. These groups categories were kept confidential for stakeholders. High performers or average students were excluded. Their social and economic factors, such as caste, family income, school infrastructure/management, no access to private tuitions, parents’ educational qualification and employment were also considered during sample selection. It was important in order to reduce sample biasness and measure their learning outcomes. Students were divided into below-mentioned three categories.

Group Category	Description
Experimental group 1	A batch of students having access to traditional classroom, digital content, android based fun learning games and a mentor at district learning centre
Experimental group 2	A batch of students having access to traditional classroom, digital content and fun learning games
Control group	A batch of students having access to traditional classroom only

Table 1. Different student groups of the intervention

These three groups were formed in schools of different blocks of a district. Hence, there was no communication among groups. Experimental group 1 had access to school pedagogy along with premium digital content, learning games and a mentor at the learning centre. However, the control group had just access to traditional school pedagogy. No extra rules and regulations were enforced for the duration of 6 months. Monthly assessments were conducted. Assessment and school marks were captured for the entire duration. At the competition of six months, final assessment was conducted for all 450 students, and consolidated learning outcome was generated. 10% weightage to each monthly tests and 50% weightage to end assessment were given. Beyond measuring marks, semi-structured interviews with their parents and class teachers were conducted in order to capture students’ critical thinking, problem-solving, and independent learning skills.

Results

The study has established a result using linear regression for Experimental group 1. Independent variables are Content App usage (%), Games Completion Rate and Percentage of attendance at the district learning centre. Dependent variable is Overall percentage score.

<i>Regression Statistics</i>	
Multiple R	0.985205
R Square	0.970629
Adjusted R Square	0.970025
Standard Error	5.2505
Observations	150

Table 2. Regression statistics for Experimental group 1

The multiple R (correlation coefficient) of 0.985205 indicates a strong positive linear relationship between the three independent variable and the dependent variables. The R Square (coefficient of determination) of 0.970629 indicates that 97.06% of the variation in the dependent variable can be explained by the three independent variables. The Adjusted R Square of 0.970025 is a modified version of R Square that takes into account the number of independent variables in the model. This value indicates that the model is a good fit for the data. The Standard Error of 5.2505 indicates the average distance that the observed values fall from the predicted values. Overall, the results suggest that the linear regression model provides a good fit to the data and can be used to make accurate predictions about learning outcome based on these independent variables.

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	66328.71	22109.57	363.5923	1.66E-67
Residual	146	8878.068	60.80869		
Total	149	75206.77			

Table 3. ANOVA table summarizes the results of the analysis of variance

Here, value of the Significance F is below 0.05 which represents there is a significant relationship between Content App usage %, Games Completion Rate, Percentage of attendance at the district learning centre and Overall percentage score.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	22.4572	1.472987	15.24603	5.33E-32	19.54607	25.36833	19.54607	25.36833
Content App usage %	0.123902	0.114101	1.085896	0.027931	-0.1016	0.349404	-0.1016	0.349404
Games Completion Rate (%)	0.266721	0.122707	2.173648	0.031343	0.02421	0.509232	0.02421	0.509232
% Attendance at the district learning center	0.320218	0.117867	2.716772	0.007389	0.087272	0.553164	0.087272	0.553164

Table 4. Statistical significance for independent variables in the linear regression model

Regression equation is as follows.

$$Y(\text{Overall Score \%}) = 22.45 + 0.12 * (\text{Content App usage \%}) + 0.26 * (\text{Games Completion Rate \%}) + 0.32 * (\text{\% Attendance at the district learning centre})$$

Here, P-values for Content App usage %, Games Completion Rate, and Percentage of attendance at the district learning centre are below 0.05. So, they are statistically significant with the Overall percentage score.

Discussion

Outcomes should not be treated as Randomized Controlled Trial (RCT). An RCT needs a large sample size from the population. However, the research study planned students' participation from the beginning of implementation. It carefully controlled other factors in order to minimize biasness. The Study has established significant prediction model just for Experimental group 1. It could not establish any statical relationship for the remaining two groups of students. Results may seem to be intuitive, but findings suggest a way forward which can be easily scalable in rural areas. Blended learning - Experimental group 1 – requires monitoring on daily basis which can achieved using real time data of schools and learning Apps. Edtech is not the proposed solution in K-12 segment. As per reports, the majority of students attend local private tuitions in villages (AMBRISH DONGRE, 2014). Treatment groups or control were not attending any additional tuition classes. The intercept in the above regression statistics is 22% (approx.). This reflects the substandard quality of education at government schools. Students cannot even pass an exam if they just rely on classroom teachings. Passing percentage was a mere 25 percent among other groups of students. At the time of baseline, all students were equally competent. Students of “Experimental group 1” did well due to basic fundamental reasons, which were absent in the remaining two groups. They had improved learning outcomes due to personalized learning experiences in the Fun Learning App and at physical learning centres. Additionally, with the help of tools and resources of the Content App; students improved their productivity, for example-real-time data analytics. Other indicators such as screen time, no of quizzes/questions attempted and duration to correctly solve a question were part of independent variables.

Experimental group 2 and Control group were unable to establish any statical relationships. Initially, all participated students had scored just above the cut-off score. Students from Experimental group 1 showed significant academic improvement. The group received overwhelmed responses from stakeholders. Due to personalized learning experience, parents and teachers testified that model was able to foster curiosity among students. Students are often involved in household/farm work in rural areas. Prior sentence fits more well in context of poor households. Irrespective of parents' positive outlook towards education, 85 % of students are involved in household or seasonal farm work. Gender disparity also makes things difficult. This is just due to poverty vicious cycle. Therefore, educational institutes must act as pull factor for students, instead of push away from homes. This can only happen when local schools and teachers create a positive fostering learning environment.

It is important to note that edtech can't be a substitute for schools in K-12 segment. This study testifies this through “Experimental Group 2”. Schools provide opportunity for socialization, hands-on learning in subjects such as arts and physical education and a sense of community. These are part of life skills. Overall, offline schools offer advantages that are difficult to replicate through edtech. With strategic management

process, blended learning models, such as Experiment group 1, should be adopted in traditional classrooms. This would bring educational equity, promote a personalized learning journey and reduce unused resources. Private tuition with school is nothing more than mental and financial burden to students and parents. It may be an option available, but it should not be a compulsion for each student. Private tuition centres generate employments, but they also promote repetition of tasks in economy. Edtech and government schools can work together to provide a more effective and engaging educational experience for students. It is high time to include blended learning activities in government schools.

Qualitative findings were captured through questionnaires, Focused Group Discussions (FGD) and semi-structured interviews. Qualitative data suggests; lack of monitoring, limited financial budget/aids for government schools, unavailability of mentors, community's poor perception or attitude, low qualification for teachers and less monetary incentives creates an unpleasant educational ecosystem for students as well as teachers.

Conclusion

Learning for K-12 segment typically involves accepting foundational knowledge and skills in various subjects. At this stage, students are introduced to more complex concepts and begin to develop critical thinking and problem-solving skills. For example, maths requires them to learn basic arithmetic operations, such as addition, subtraction, multiplication, and division, as well as fractions, decimals, and geometry. Passing school exam becomes students' goal in absence of interest, curiosity and external support. Education prepares them for academic and personal success. Traditional classrooms are unable to fill the gap with education inequality. The magnitude of Indian education system crisis is huge. The government of India has launched several schemes and initiatives to establish model schools across the country. Government Model schools are established with the aim of providing quality education to students and improving the overall educational system in India. Out of 15 schools, 5 were Model schools. Study doesn't find that resources are being used optimally in these schools. Schemes and initiatives are crucial, but fulfilling gaps at grassroots is difficult. These gaps hampers learning process in classrooms. Learning builds confidence, encourages curiosity and foster social skills. It is also observed that model schools also struggle to maintain status of "Model School" due to various reasons. Revival of government schools require strategic interventions in rural India. This would require a multifaceted approach that involves addressing various challenges such as lack of infrastructure, social stigma, teacher shortages, low enrolment rates, and poor quality of education. Including edtech companies in rural education system would help achieve access to quality education, improve learning outcomes, enhance teacher effectiveness, increase efficiency and cost savings, and prepare rural students for the digital age. Establishing state of the art facility requires sector-specific expertise.

Education department often fails to efficiently use resources. They don't have organized institutional support or expertise in the edtech domain. It should onboard private companies which can offer quality digital products and services in rural areas. From the observations of Experimental group 2, it is also derived that only edtech can't make a difference. K-12 segment students demands interactions, monitoring/supervision of students and constant encouragements. Edtech products and services are not sufficient for learning outcomes till higher secondary levels. Socialization and a sense of community is required at grassroots level to bring positive changes. Blended learning has the potential to revolutionize

education in rural India and provide students with new opportunities for learning and growth. This helps build immediate feedback, support, trust, empathy, emotional support, constant positive change and understanding among key stakeholders.

References

1. AMBRISH DONGRE, A. K. (2014). *HOW MUCH DOES INDIA SPEND PER STUDENT ON ELEMENTARY EDUCATION?* New Delhi: Accountability Initiative, Centre for Policy Research.
2. Centre, A. (2022). *Annual Status of Education Report (Rural) 2021*. New Delhi: ASER.
3. Centre, A. (2023). *Annual Status of Education Report (Rural) 2022*. New Delhi: ASER.
4. Development, M. o. (2021). *National Education Policy 2020*. New Delhi: Government of India.
5. Literacy, D. o. (2022). *UNIFIED DISTRICT INFORMATION SYSTEM FOR EDUCATION PLUS* . Ministry of Education, Government of India . Retrieved from The Siasat Daily: <https://www.siasat.com/india-sees-decline-in-number-of-govt-schools-by-over-51k-since-2018-2323978/>