Factors Influencing Elementary Enrolment In India

Contents:

Abstract:

In this paper an effort is made to analyse the impact of different indicators such as teachers, school infrastructure and facilities on school enrolment of children aged 6 to 14 years in India within the key influencing factors framework. The empirical results based on the econometric analysis of aggregate district level data 36 Indian states and union territories lead to several key findings. Key influencing factors such as, number of qualified teachers, number of schools received mid-day meal, exert a positive and significant influence on the school enrolment of children aged 6 to 14 years. Also, the

total enrolment of children in the 6 to 14 age groups are significantly increased in schools that are provided teaching-learning material (TLM) grants.

Background:

Elementary education is an important part for students as well as for the economic development of a country. So, increase the students' participation or to increase the enrolment in school education system is very important. As participation in the elementary education system will help the children not only to develop their thinking ability but also provide an educational foundation from the beginning. Economist James Heckman analysed (1972) that kids who received full-day care, along with meals, games, and activity are healthier and active as adults, than kids who didn't receive such services.

Apart from this, elementary education also contributes effectively to the national development. This requires a long process, that includes careful planning and formulation of effective programmes and schemes. So, evidence based planning and management of education has become important not only to justify higher investments in the social sector but also enhance the competitiveness of India in the global economy (Tilak, Jandhyala, Panchamukhi, 2015). Therefore, it important to understand, what is current scenario and how to increase the children participation in the education system.

Enrolment in elementary education depends on various factors. School infrastructure plays an important to increase the enrolment. Pritchett & Filmer (1999) present compelling evidence that there could be significant efficiency and productivity gains by reallocating the shares of public expenditures to areas of high marginal productivity, such as learning materials (like text books and other types of instructional materials) especially in low income and middle income countries where availability of instructional materials and quality of school facilities is at a lower level. A minimum basic quality of school facilities matters significant increase in educational outcomes such as net enrolment rate, gross enrolment rate. A basic standard of school facilities would include enough class rooms to accommodate about 30 students per classroom. So, sufficient number of classrooms, number of desks and also the learning materials are needed in order to accommodate total enrolled students in a school. In addition to this, adequate sanitation in terms of water and toilets is also an important aspect of school facilities for increasing the willingness of parents to enrol their children especially girls. In most cases, parents prefer separate toilets for boys and girls. Also, the average distance girls walk to get to school is a factor that becomes important as girls enter the upper grades of schooling.

Apart from school infrastructure, different facilities provided by schools, also help to increase the overall enrolment. Different authors evaluate the effect of school feeding programs on school participation. Powell et al. (1998), Jacoby E. and E. (1996) and Kremer and Vermeersch (2004) each find increased participation resulting from school breakfasts in Jamaica, Peru and Kenya, respectively. And Kazianga et al. (2009) find that schools that provide lunch as well as take home rations facilities to students, that helps to increase the new enrolment by 5 to 6 percentage points. Not only lunch facility but also others facilities such as, distribution free textbooks, uniforms also exert strong and significant influence on school enrolment. Also, more number of students attend the class in regular basis. (Kremer et al. 2002b).

Teachers are the one of the most important driving factor to increase the school enrolment. School teachers and staff are the primary connection that a family makes with a school. These educators will be the ones to teach and mentor students. When they deliver a high quality educational experience and personally connect with the children in a positive way, this experience will impact enrolment. (Rick Newberry, 2016)

Literacy rate is one of the important factor to increase the Enrolment. This is because literate parents and relatives, as compared to illiterate ones, are more conscious to continue the education of their children. In a study, Sengupta and Guha (2002) found that parental education had the strongest positive influence on girls' enrolment, which helps to increase the girls' participation in education.
As education is considered to be one of the important part of the solution to all socio-economic problem within the society, so the global organizations have been giving pressure on universalisation of primary education. Prof. Amartya Kumar Sen (1998), Nobel laureate in Economics, has also pointed out that for sustainable development even the poorest of the poor should be provided proper education and accordingly steps have to be taken to bring elementary education to the doorsteps of the rural people, since more than 75 per cent of Indians live in rural areas. Therefore, it is important to

acknowledge what are the factors that really influence the enrolment. A clear distinction among these indicators on the basis of their intensity of influence is needed for policy purpose.

Research Objective:

School enrolment depends upon various factors. So this research aims to find the factors that contribute or influence the school enrolment in India, based on some indicators. Also help to find the interrelationship among the indicators, that might affect the overall enrolment.

Key Influencing Factors:

The study framework helps to identify the important factors that influence the enrolment in elementary education. 17 indicators have been suggested for analysis, which again re-grouped into four important indicators, which is given below. The re-grouping of indicators in four groups would help in assessing the overall situation in a state/district with particular reference to a sub-group.

Figure 1: Types of Indicators:

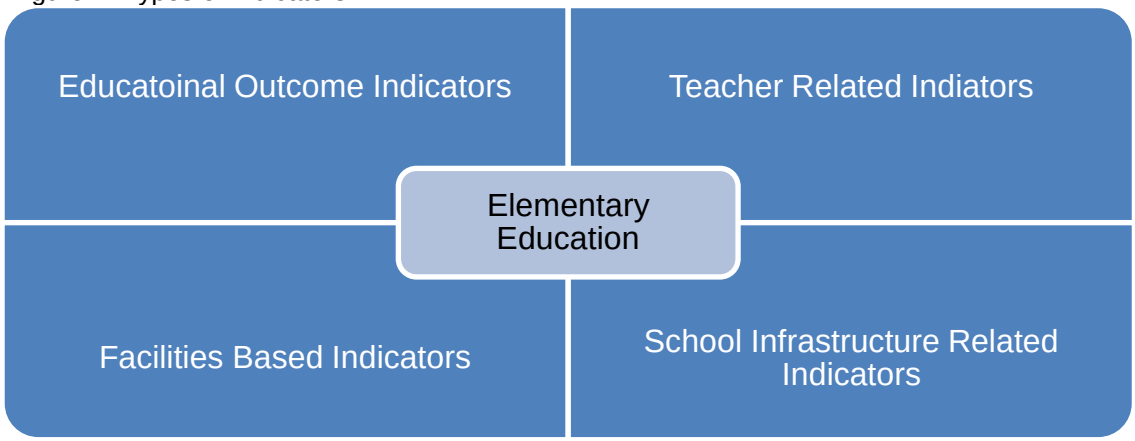


Table 1: Indicators in each sub-group.

Indicator Classification	Type of Indicators
Teacher Related Indicators	• Number of teachers • Number of qualified teachers • Number of schools with single teacher
School Infrastructure Related Indicators	• Number of schools • Number of classroom, • Number of schools with drinking water, • Number of schools with electricity, • Number of schools with boys' toilet, • Number of schools with girls' toilet, • Number of Single Classroom Schools, • Number of Schools Approached by All Weather Roads
Facilities Related Indicators	• Number of Schools Received TML Grant • Number of Schools Received Development Grant • Number of Schools Providing Mid-Day Meal • Number of Schools with Computers
Educational Outcome Indicators	• Gross Enrolment Ratio, Net Enrolment Rate • Literacy rate

Current Scenario in Elementary Education:

Educational Outcome Indicators:

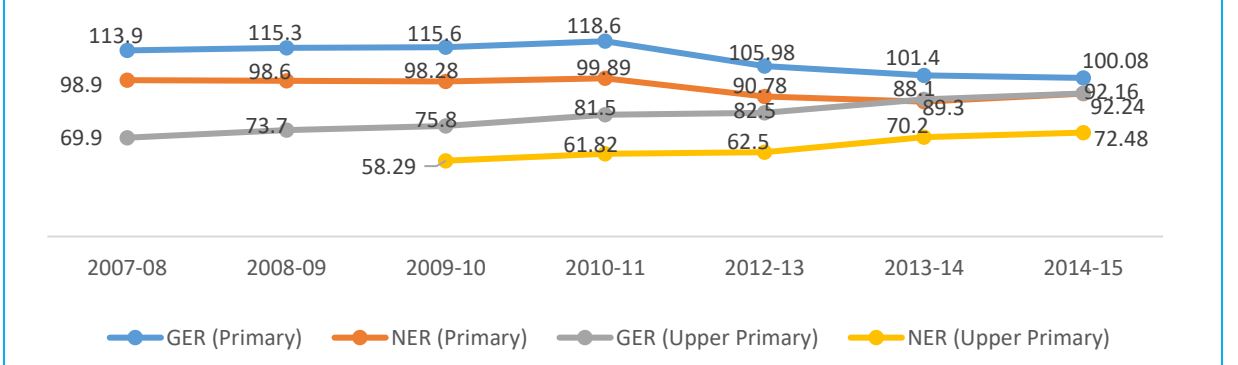
1.97 lakh schools have been opened in last 8 years (1.11 lakh from year 2007 to 2010 and 0.87 lakh from 2011 to 2015) where, 99 percent of India's rural population has a primary school within a one kilometre radius. The enrolment in elementary classes has increased with 1.19% CAGR (compound annual growth rate) from 2007 to 2015 (18.5 crore in 2007-08 to 20.33 crore in 2014-15). But the GER/NER at primary levels started showing a decreasing trend after 2010-11 while there is slight improvement at upper primary levels whereas still 30 percent of age appropriate children are out of school.

In the year 2015, 43% (269 out of 626) district have GER less than 96.5%(national average). Also there are 7 districts where enrolment less than 50% and the districts are Lohit, Tirap (Arunachal pradesh), Darjiling (WB), Surgiya, Durg, Dantewada (Chhattisgarh), Jungadh (Gujarat). The following table gives information about number of districts, where GER is below the national average. In 2015, all the districts in Andhra Pradesh fall below the national average, which is followed by Bihar, J & K, Rajasthan, Uttar Pradesh.

Table 2: Districts below the national average

States	% of districts where GER is below National Average (96.5%)
Jammu & Kashmir	77 (17 out of 22)
Uttarakhand	46 (6 out of 13)
Rajasthan	74 (25 out of 33)
Uttar Pradesh	64 (45 out of 71)
Bihar	78 (30 out of 38)
Nagaland	63 (7 out of 11)
Karnataka	57 (15 out of 26)
Andhra Pradesh	100 (13 out of 13)
Gujarat	65 (17 out of 26)

Enrolment Based Indicators at Elementary Level



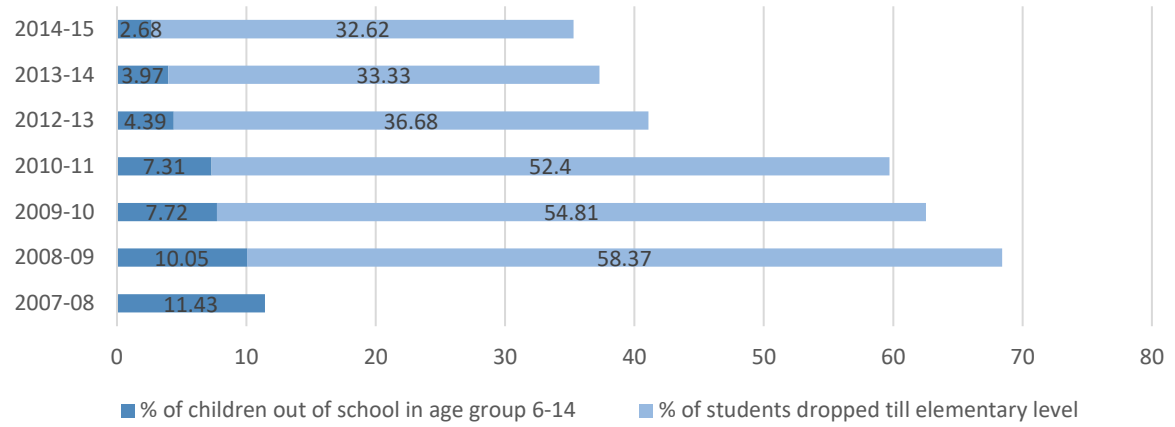
Source: Elementary Education in India, DISE 2007-15 flash statistics and state report cards, NUEPA

Despite of the high enrolment, 56 lakh children remain out of school in year 2014-15 (which was 2.38 crore in 2007-08). Moreover, 32.62% of children drop out of school before completing the full cycle of elementary education in 2015. Also the dropout rate in rural areas in elementary education for ST category students is 48.2%. Different reasons have been listed for not completing the basic education such as:

A) Economic condition of the family is not good
B) Child suffers from different health issues
C) Child to supplement household income
D) Education is not considered necessary by parents
E) Irregular teaching or teaching was not satisfactory in the school
F) School location not suitable (School too far, non-availability of transport, etc,)

G) School lacks basic infrastructure such as classrooms, toilets, drinking water, electricity
H) Student not able to qualify the exams. (repeated failure in the exam)

Percentage of Children Out Of School Before Secondary Education Level



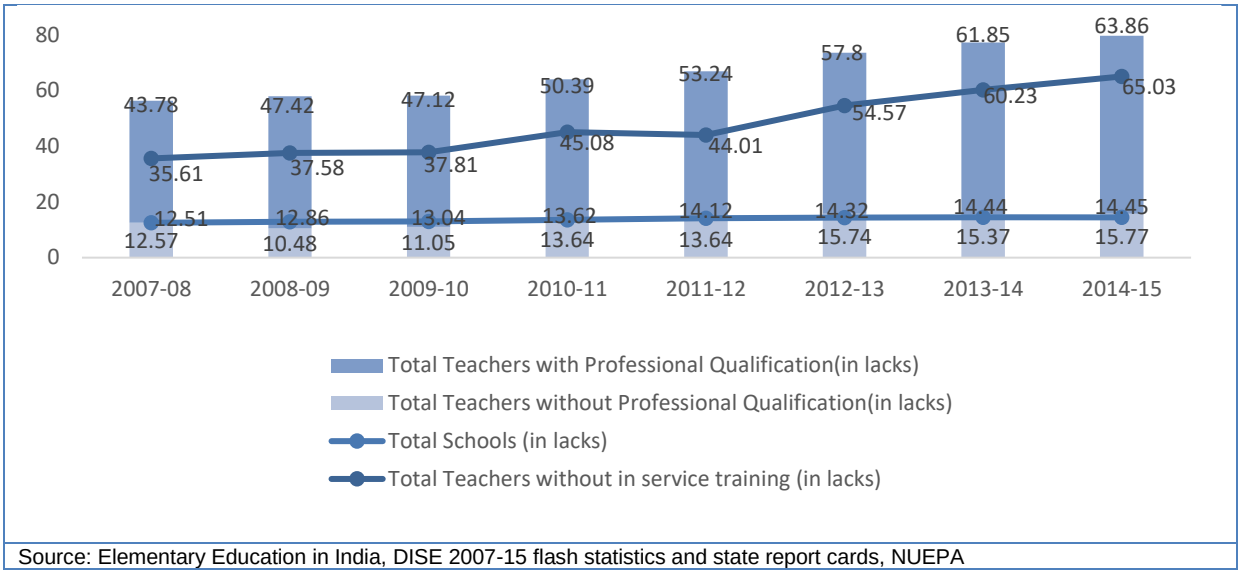
Source: ASER 2007-2015

Teacher Related Indicators:

The number of schools increased from 13.01 lakhs in 2009-10 to 14.45 lakhs in 2014-15 (approximate increase of 10%) and no. of teachers from 58.17 lakhs in 2009-10 to 79.63 in 2014-15 (approximate increase of 30%). These efforts (increasing number of teachers) have contributed to a sharp improvement in Pupil Teacher Ratio (PTR) at the primary level from 36:1 in 2006-07 to 25:1 in 2014-15. This achievement brings the national average at par with the norms set under the RTE Act 2009 (PTR should be 30:1). But still, 28% of the primary and 15% (same as previous year) of upper primary schools don't adhere to prescribed norms of PTR in 2014-15. And also 21% (137 out of 626) districts have PTR above prescribed national norms. Again, in 2015, there are some districts (99% in Bihar, 87% in Jharkhand, 74% in UP and 23% in Gujarat) where enrolment is high but the PTR is greater than the prescribed norms.

RTE also mandates that all teachers should be professionally qualified and trained, to improve not only children's learning but also their competency as professional with improved practice of teaching. But it has been observed that 20 percent of the teachers are not professionally qualified as per prescribed norms of the act (22% in 2007-08 and 18% in 2014-15). About 82% of the teachers have not received the service training in 2014-15 compared to 63% in 2007-08. Again, 8% schools (total 112005 number of schools) have only one teacher.

Status of schools and Number of Qualified Teachers



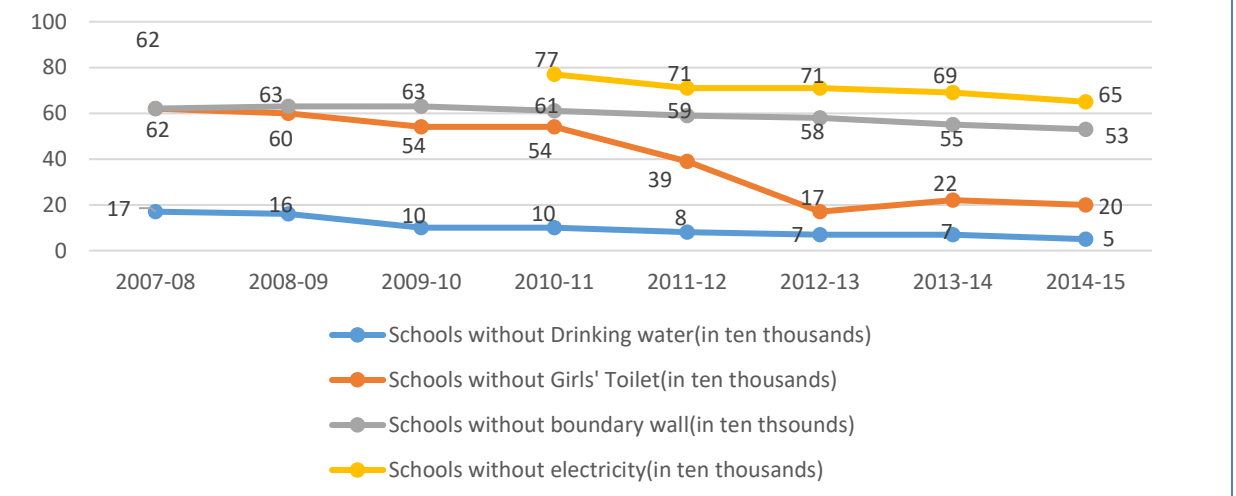
Source: Elementary Education in India, DISE 2007-15 flash statistics and state report cards, NUEPA

School Infrastructure Related Indicators:

One of the goals of RTE- SSA (Sarva Shiksha Abhiyan) is to provide equal and all kind of access to every child enrolled in the schools. The primary focus is on ensuring physical access and equity to every schools. As per the school infrastructure concern, the SSA envisages a safe and secure, clean and hygienic school compound, complete with toilet, drinking water facilities, boundary wall, electrification, playground facilities and land-scaping to every schools. So the key infrastructure facilities such as availability of girl's toilet has increased with 12.9% CAGR in last eight years (from 6.63 lakh school in 2007-08 to 17.50 lakh in 2014-15). Still about 2% (20,000) schools have no girls' toilet in the year 2015. Again 34% (217 out of 626) districts have number of schools with girls' toilet below the annual average (i.e 87%).

Also, the availability of drinking water has been increased with 10.4% CAGR in last eight years (6.32 lakh schools in 2007-08 to 13.95 lakh in 2014-15), still 3.5% (50,000 schools) school don't have access to safe drinking water. Also 33% (212 out of 626) districts have, number of schools with drinking water facilities below the national average (i.e 95%). Again the number of schools with proper electricity connection has been increased with 1.44% CAGR in last five years (12.85 lakh in 2009-10 to 13.80 in 2014-15), still 4.49% (65000) schools have no electricity connection in 2015.

School Infrastructure Related Indicators



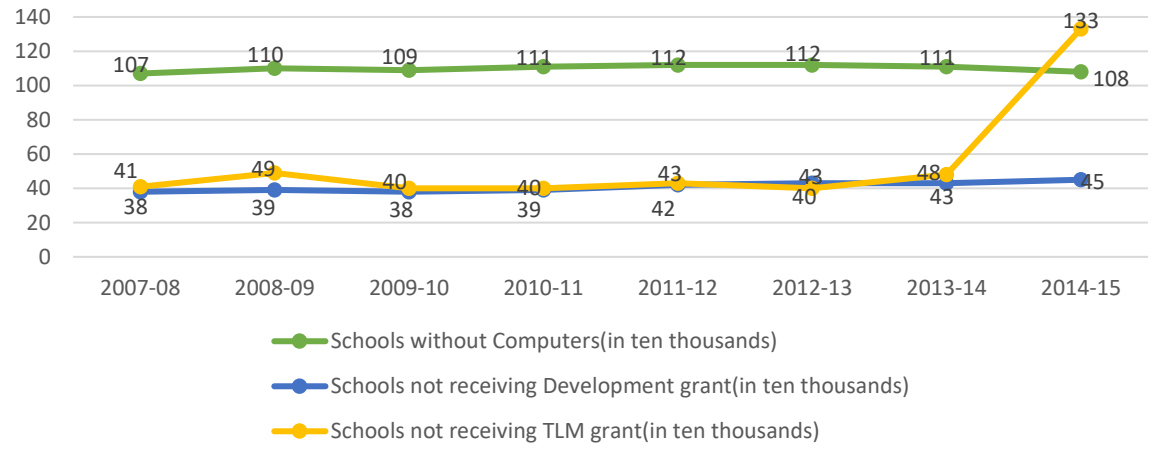
Source: Elementary Education in India, DISE 2007-15 flash statistics and state report cards, NUEPA

Facilities related Indicators:

One of the goals of the Sarva Shiksha Abhiyan (SSA) has been to achieve universal retention by enabling children enrolled in Class I to complete eight years of elementary education. So focus is on expansion of schooling facilities in under-served or un-served locations in order to ensure that all children, especially those children in rural and remote areas have access to education. Different initiatives such as outcome improvement initiatives, providing basic facilities including improved school infrastructure, providing TLM grant (teaching learning materials), providing development grant, mid-day meal programme and others awareness generation program have contributed substantially to reduction in drop-out rates and improved enrolment rates in primary, upper primary education.

As per the facilities concern, it has been observed that the unavailability of computers in schools (10.7 lakhs schools in 2007-08 and 10.08 lakh schools in 2014-15) has not changed significantly over last 8 years. Number of schools not receiving development grant has increased from 39 thousand (2010-11) to 45 thousand (2014-15) in last five years. Also there is a sudden rise in number of schools not receiving teaching learning materials grant (TLM) from last year. (48 thousand in 2014 to 133 thousand in 2015). In 2014-15 only 76% schools are providing mid-day meal to the students. In 2015, there are some districts (99% districts in Uttarakhand and Delhi, 80% in Telangana, 78% in Rajasthan and 70% in Punjab) where enrolment is high but number of schools providing mid-day meal fall below the national average (i.e. 77%).

School Specific Facilities Related Indicators



Source: Elementary Education in India, DISE 2007-15 flash statistics and state report cards, NUEPA

Data Source:

Data are collected for 626 districts (36 states and UTs) of India for the year 2014-15. Total enrolment of districts is regressed on many variables which are described in the later sections. Data were drawn from DISE (District Information System for Education) report for 2014-15.

Result & Discussion:

Descriptive Statistics of the indicators are given below. All the values are taken in ln i.e. in natural logarithm. The average enrolment is 12.22 (2.02 lakh) with standard deviation 1.03.

Table 3: Descriptive statistics of explanatory variables are given below

Indicators	Mean	Standard Deviation	N
Total Enrolment	12.22	1.03	626
Number of schools with Electricity	6.60	1.10	626
Number of schools providing Mid-Day Meal	7.13	0.93	626
Number of schools providing TLM grant	4.06	1.75	626
Number of schools with single classroom	3.25	1.85	626

Number of qualified teacher	8.82	0.98	626
Number of schools with Girls' toilet	7.25	0.87	626

Table 4: Summary Table

Total enrolment is the dependent variable and regression is done on given independent variables.

Model	R square	Standard error	Significance Level	F Change
M1	.589[a]	.667	0.000	894.075
M2	.590[b]	.580	0.000	447.87
M3	.608[c]	.572	0.000	321.55
M4	.789[d]	.562	0.000	580.12
M5	.791[e]	.477	0.000	468.43
M6	.819[f]	.444	0.000	466.07

a. Predictors: (Constant), Number of Schools Providing Mid-Day Meal
b. Predictors: (Constant), Number of Schools Providing Mid-Day Meal, Number of Schools Received TLM Grant
c. Predictors: (Constant), Number of Schools Providing Mid-Day Meal, Number of Schools Received TLM Grant, Single Classroom Schools
d. Predictors: (Constant), Number of Schools Providing Mid-Day Meal, Number of Schools Received TLM Grant, Single Classroom Schools, Number of qualified teachers
e. Predictors: (Constant), Number of Schools Providing Mid-Day Meal, Number of Schools Received TLM Grant, Single Classroom Schools, Number of qualified teachers, Number of Schools with Electricity
f. Predictors: (Constant), Number of Schools Providing Mid-Day Meal, Number of Schools Received TLM Grant, Single Classroom Schools, Number of qualified teachers, Number of Schools with Electricity, Number of schools with girls' toilet.
g. Dependent Variable: Total Enrolment.

Six significant regression models emerged corresponding to the six predictors with a predictor added each time. The summary of these models are shown in Table 4. Predictor Number of schools providing mid-day meal alone (in model1: F= 894.075, p=.000) explained 58.9% variance in the total enrolment. Addition of number of schools received TLM grant (model2: F= 447.87, p= .000) increased the R^2 to 59.0 percent. Inclusion of single classroom schools (model 3: F=321.55, p= .000) increased the R^2 value to 60.8%. Further inclusion of total number of qualified teachers (model 4: F=580.12, p=.000) explained 78.9% variance in the total enrolment. Addition of number of schools with electricity (model 5: F=468.43, p=.000) resulted increased in R^2 to 79.1%. Also addition of number of schools with girls' toilet (model 6: F=466.07, p=.000) increased the R^2 value to 81.9% but in this model the explanatory variables are highly correlated with each other's. In model 5 and model 6 multicollinearity exist among the explanatory or independent variables, that might affect other variables in a model and change the beta coefficients. So in model 5 the person correlation coefficient between number of qualified teachers and number of schools with electricity is 0.891. Likewise, in model 6 the person correlation coefficient between number of schools with girls' toilet and number of schools providing mid-day meal is 0.880, which are very high as compare to others variables.

Thus model 4 that is regression of total enrolment on Number of Schools Providing mid-day Meal, Number of Schools Received TLM Grant, Single Classroom Schools and Number of qualified teachers emerged as the best predicting model. The estimated parameters of this model are presented in Table 5. All the beta coefficients are significant and thus contribute to prediction of total enrolment.

Table 5: Regression coefficients of model 4:

Predictors	Unstandardized Coefficient (Beta)	Standard Error	t. value	Sig.
(Constant)	3.905	.187	20.852	.000
Number of Schools Providing Mid-Day Meal	.358	.038	9.439	.000
Number of Schools Received TLM Grant	.081	.014	5.751	.000
Single Classroom Schools	-.043	.013	-3.211	.001
Total Number of Qualified Teachers	.632	.027	23.068	.000

Dependent Variable: Total Enrolment.

Among these four predictors, total number of qualified teacher found to be strongest contributor (Beta=0.632, t=23.06, p=.000) and single classroom schools found to be weak predictor (Beta=-0.43, t=-3.32, p=.001) as compared to others. Using the unstandardized regression coefficients, the regression equation works out to:

Total Enrolment= 49.40 + 1.43*Number of schools providing Mid-Day Meal + 1.08* Number of schools Received TLM grant + (-1.04) *Single classroom schools + 1.881*Total number of Qualified teachers

The regression equation stated above speaks the differential impact of four indicators on the total enrolment. Following are the conclusions:

1) Every 1% increase in total qualified teachers, the enrolment will increase by 1.88%. It can also be explained as every 1000 increase in total number of qualified teacher, enrolment will increase by 188100. In order to increase the number of teachers, our primary focus should be the area where enrolment is high, so that we can able to maintain the prescribed norms for PTR and secondly the area where both enrolment and number of qualified teachers are low. If we increase the number of qualified teachers, they can motivate the children in a particular locality that leads to increase the children participation in the schools.
2) Similarly, if the number of schools providing mid-day meal increased by 1%, then the total enrolment in elementary education increased by 1.43%. It can be stated that every 1000 increase in number of schools providing mid-day meal, enrolment will increase by 143000. By increasing the number of schools received mid-day meal schemes, it could help to increase the students' interest to participate in the education system. So in order to increase the enrolment our focus should be on low enrolment area, where children are not willing to participate in the education system. Not only the low enrolment area but also out focus should be on the area where enrolment is high but, mid-day meal scheme is not provided to that particular schools. So that it could able to minimize the dropout rate.
3) From the above equation, it has been noticed that number of single classroom school coefficient is negative. So it can be described as every 1% decrease in number of single classroom schools, total enrolment will increase by 1.04% which implies every one hundred decrease in number of single classroom schools, total enrolment will increase by 104000.
4) Enrolment in the schools are expected to increase by 1.08%, when number of schools received TLM grant increase by 1%. By providing required facilities to a particular school, help to increase the school enrolment in that locality. Right decisions should be taken by districts administrations for providing the TLM grant to the schools where enrolment are very. If a child gets his/her required facilities, so it could help to increase students' interest in study. Further helps to increase the student participation the schools.

Conclusion:

Total enrolment varies from country to countries and even across various regions of the same country. There are many factors that influence the enrolment. Among those factors, some have greater influence as compared to the others. Possible suitable initiatives are required to increase the students' participation in elementary education. Policy options, among others, include – improvement of school infrastructures such as increase the number of classrooms. As enrolment has been increased year by year, in order to maintain student classroom ratio (SCR) as per the prescribed norms (30:1) by RTE, number of classroom should be increased. Also increase the numbers of qualified teachers, and provide required facilities such as providing mid-day meal, providing study materials, school uniform to all students will help to increase the students' participation in education system. Finally, putting high levels of education aid at right place by concentrating on school enrolment will result in more children going to school. But again the challenge for the years to come is how to improve the quality of instruction.

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