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Examining the Status of Educational Outcomes Vis a-vis School Governance for Primary Schools in Rural India: A Case Study in Dapoli Block, Maharashtra

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Abstract

A critical analysis of the educational deprivation or poverty of education in rural India in terms of delivery of quality services has been attempted to put forward through a critical survey of 21 rural primary schools from Dapoli block in Maharashtra (India). The status of governance and outcome is assessed constructing two different indices with number of inter related parameters using Principal Component Analysis. The indicators are considered following 'Governance Indicators' reported by WGI, UNDP (2016). Schools are ranked with the two different index values for comparative static analysis. In order to check the parity between governance quality and outcome, rank correlation has been estimated between the School-Governance index and School-Outcome index. The findings refer a positive relationship between the two indicators which signifies, for better quality outcome there is absolute need of control and monitoring of school governance which is very poor across public primary schools in rural India.

Keywords: Rural India, Primary Education, Case-study, School governance, Principal Component Analysis

JEL Classification: A20, C38, C93

Introduction:

There is no second opinion that schooling affects earnings, employability and the other aspects of an individual's life and thus an aggregate level, it affects prosperity and growth of an economy. In order to enable every child to access required minimum education while keeping curriculum load limited, the National Curriculum Framework, (2005) has proposed the two flagship programs by the Indian government – 1) the Sarva Shiksha Abhiyan in 2001 and 2) the Right to Education Act, 2009. They have observed the education priorities augmented amongst households catalyzing enhancements in educational performance. According to UNDP data (UNDP, 2016)[2], the mean years of schooling of working population have risen to 3.3 years. The progress of enrolment in secondary education hastened from 4.3% each year during the 1990s to 6.27% each year from 2000–10. SSA has concentrated on the accessibility and affordability of the elementary education showing a huge rise of one

[2] Human Development Report 2016, UNDP;

lakh ninety five thousand primary schools and 1.8 million additional classrooms while supporting 200 million children in 1.4 million schools in India. However, still the mean schooling years are quite lower as compared to the other developing economies such as China (8.17 years); Brazil (7.54 years) and less than the average global level (7.09 years), too. Though, India have achieved a praiseworthy performance in quantitative schooling-aspects such as the number of schools and enrolment rate, it is not the necessary and sufficient condition to determine the quality of the schooling in the various parts of India causing India to achieve lower rank (131) in Human development index (UNDP, 2017)[3]. Some of the burden of this lower rank falls on rural education sector due to lack of inclusivity, unequitable schooling facilities for rural children and failure to create employable and productive human capital for upcoming future. These reasons directly point towards the development of school-education system. This deprivation in education represents educational poverty damaging core agenda of forth sustainable development goal agenda to provide Inclusive and equitable Education for all. Considering India's demographical scenario, still the rural area has its huge impact on the development and economic activities of the country as a whole. Primary education erects the whole education system of India. (Tilak, 2000). Hence, all these factors related to the rural primary education are considered while framing the research question based on thorough study of various theoretical and empirical literatures available which is summarized as literature review below.

Literature Review:

Economists like Arthur Lewis, Gary Becker, Theodore Schultz and Jacob Mincer put forward a different explanation for education, propagating the term "human capital". These economist have treated education as an effort made by an individual to boost their abilities concerning to the employment. (Omar-Al-Ubaydli, 2018).

It is incumbent on part of the government to ensure the education of every human who has born under its citizenship. The government's intervention is essential even in this most private domain of a family, where parents disregard to provide their children with "training and instruction for the mind" along with the "food for the body". Active government participation would empower the local authority or the school management to realize and solve the problems in the education (Hira, 2011). Hence, the school Education plays a crucial role in the rise and fall of nations in 21st century. (Awan A. , 2014).

[3] Human Development Report 2017, UNDP.

Therefore, raising the quality of primary-schooling at a foundation of is the key to improve schools' educational outcomes and the quality of the economy's human capital. Despite the multiple efforts of reducing educational inequalities taken by the government many rural schools are found poorly performing compared to their wealthier peers (Clifton. & Cook, 2012). At an individual level, education affects earnings, employability and the other aspects of a sound human life. At a national level, a stock of skills of a country matters immensely for its prosperity and growth rate. (Burgess, 2016).

When Vivek Wadhwa (2018) has explained that Indian education system must regard that in 2006, for the first time in world history, the number of service workers surpassed the number of agricultural laborers and hence, should begin to develop their school-curriculum to address this necessity of the Indian job-markets. Whereas "Sam" Pitroda as head of National Knowledge Commission has recommended to augment Indians' access to knowledge as well as the facility and ability in applying that knowledge through enhancement in the quality of school-education system, science and technology training at all levels of education. ("Sam" Pitroda, 2018). According to the 'World Economic Forum', Global Human Capital Index, India has been ranked at a place of 103rd which is the lowest among BRICS countries (WEF, 2017). Considering this employment gender gap, still India has been ranked as one of the lowest in the world due to low schooling-quality. Such problems majorly boil down to the basic elementary education acquired by the person to determine further his outcome in the employment-market.

The education institutions in India are suffering from mediocrity and substantial politicization, strict centralized regulation and limitless litigation over governing-policies. Therefore, government must tramp thoughtfully while considering education-subsidies or while putting forward any other education policies, for fear that they might be creating the white elephants for states. They must considerably focus on the school-education, especially the primary education and then the secondary education which place the foundation of the job-market. (Kapur, 2010).

Even the agenda of the Sustainable Development Goals constitutes the new global education goal (SDG 4) which is to ensure the inclusive and equitable quality education and to promote the lifelong learning opportunities for all and has seven targets and three means of implementation. (Global-Education-Monitoring-Report, 2017). Over 1,600 participants from the 160 countries including India embraced this Incheon Declaration for Education, which

has set forth a newer vision for the education. (Incheon-Declaration, 2015). But effectiveness of the efforts on governance and functioning of the schooling-system and the resulting educational outcome, especially in the rural area is ambiguous. (Ghosh & Parruck, 2014).

Appealing as it seems, there are multiple loops in implementing the agenda through the traditional and orthodox schooling education system of India in its own diverse geographical, cultural and lingual characteristics. Even, based on present trends in universal primary education in Southern Asia, India is expected to achieve universal primary education in 2050. (GEM-UNESCO, 2016).

Similarly, though the percentage of enrolment has risen noticeably, there is not much change in reading levels in rural areas especially. Only 53.4% children in the fifth Standard are able to read the second standard level text which has put forward the fact that even after the lessons taken for five years in school, nearly half of all children are not even at the expected level of them after learning for two years in school. The problems affecting the schooling system in rural areas of India are quite diverse and are often deep rooted so that the solution cannot be procured just by altering any problem-causing singular factor. (Hazra, 2011). This has led to the scenario where the fluidity is absent in the schooling-system in India due to deposition of regulatory cholesterol in its every nerve blocking inflow of quality education and outflow of qualitative educational-outcomes. (Sabharwal, 2017).

There is largely circumstantial evidence that state regulations and government recognition of schools act as an alternative for quality in the education market. (Sommers, 2013). In India, human capital formation has been traditionally arising in public funded schools but since liberalization happened in 1991, private schools increasingly offer an alternative option (G.G.KINGDON, 2007). Though, there are many inspiring efforts across the country which seek to provide quality education especially in rural areas, such as - The Barefoot College, Gurukul School in rural Bihar, etc., there is absence of the understanding of what makes for a valuable and meaningful schooling experience in rural India. Though they are successful, they have failed to be replicated in other areas. (Sengupta, 2012).

J. P. Naik has tried to answer the disparity between input and outcome in rural education by stressing the equally urgent necessity to transform the existing school-educational structure concerning the outcomes of school-education and the fact that huge amount of public and private investment has been channelized in the sector to erect the infrastructure and sound school-governance, to shift the emphasis from teaching to learning, to involve the entire

community in the educational process rather than depend exclusively upon the professional teachers, and to make the system decentralized, diversified, elastic and dynamic (Naik, 1975)

The fundamental problem is the "unpreparedness of the schools and schooling system" for mass education. Available scarce classrooms in the most primary schools are usually uninviting, with uneven floors, scraggly mats to sit on, the leaking roofs, lack of drinking water or toilets. Due to the mechanical race to accomplish 'schooling for all' the government seems to have absolutely missed out on what would constitute 'learning for all'. The greater stress is placed on establishing schools but not on the working and teaching system undergoing inside a school which has resulted in higher enrolment rate with equally higher dropout rate. These contradictions in the course of education can be recognized for the theory of modification linking the primary schooling, school-governance and school-outcome from such a system to the improved learning quality, outcomes, efficiency, equity, and access to education in developing countries like India; but the proof of such correlation is more indicative than it is conclusive. In rural areas, even the easy and mandatory access to education in primary schools has begun to widen the ethnic inequalities in the schooling-system. (Hannum, 2002).

Educational equalities or inclusivity depend on so many different factors such as availability and infrastructure of number of schools, quality of schools and that of educational outcome, expectations from schooling, as well as teachers' and staff's attitude towards system and its functioning, etc. (Thorat, Aryama, & Negi, 2005).

Considering geographical stratification, the decade from 1991-2000 has observed remarkable progress in the elementary education field in the rural India but still it has been showing the traces of disparity between the educational outcomes through various variable across the states of India, majorly in their rural areas. (Ramachandran, 2003). In India, especially in rural area, people in age group of 5-24 years who belong to relatively poorer families have higher proportion of the non-attendance as well as the low participation in the elementary school as compared to the other students whereas the input given to all the schools by the government remains the same. In terms of the availability of infrastructural outcomes of the schools, the rural primary schools might be failing the most. (Aggarwal, 2000).

Considering state-wise performance in primary education sector in rural India, literacy rate of Maharashtra state was found the second highest in India's 2011 census. It was also more than the average literacy rate in India showing that Maharashtra has been leaping forward

impressively in the sector of primary education which has shown the outcome of teacher-pupil ratio was below 1 to 40 in approximately 95% schools from the overall state. (PREMA, 2012). Though physical infrastructure of rural schools is far behind the satisfactory-level, with 82% of the schools is in need of renovation. Among all Indian states, Maharashtra has shown far better quantitative results; but still the required flexibility is absent in the rural education system in Maharashtra (Sabharwal, 2017).

In Maharashtra, the fall in the learning levels is realized to come mostly from rural public schools. The percentage of students who could read a second Standard level text in fifth Standard in public schools declined slightly from 51.4% to 50.7% between 2006 and 2010. The learning gap of 9.8 percentage points in 2006 doubled to 20.3 percentage-points in 2014 in rural public schools. (ASER, 2014). Two third of the learning disparity between public and private schools could be accredited to the factors other than just a type of school. (Wadhwa, 2014).

The development of the education sector of rural area in Maharashtra state has been characterized by the massive expansion in the field of number of schools providing basic elementary education to the students under RTE. However, whether this educational expansion is satisfactory to reduce educational-inequalities along with improvement the quality of the educational outcome has remained as the thorny issues for many years with very little empirical evidence and data indications to form the future policies regarding the subject matter balancing the governance input and the outcome based on the input and requirement of employment market. The geographic separation in rural and urban areas has sharpened the creation of educational-disparity, achievement and the quality of employment thereof. (KULKARNI & DESAI, 2008).

India being the second most populous country and the ranked first among those other with highest rural population, addressing the research-question "whether the Indian schools in rural area striving to ensure inclusive and equitable education" has gain the significant importance to prescribe the recommendations for policy-makers enabling them to mold their educational-policies according to the resulted observations and conclusion.

Countries like India have enormous resources; but they need fine tuning of the schooling education sector to meet global standards through uniformity. (Gangan & Gupta, 2009). Education-institutions must be driven for a vision of national growth by improving human capital through regularization of the education sector prioritizing country's growth

with a complemented reliable ranking system which would determine the quality of input and outcome of the education sector for both the demand and supply side of the education market. These ranks would motivate these institutions and the governing bodies to take the faster steps in the direction for betterment of education system. (Boaz, 2013).

The entire group of individual elements that the researcher wants to investigate is the population of research. In this research paper the methodology is applied for a simple set of twenty-one rural primary schools aided by government, making it as a case study or a trial-run to broaden the results and outcomes in the further go. (Barman & Saikat, 2011).

Principal component analysis is evaluated to form a major ranking systems followed in India as like that on the global level which shows that ranking systems though take efforts to establish a balanced relationships between variant parameters recognized. (Raveendran, 2013). The factor analysis methodology of the Principal component analysis is used to evaluate of index of Teachers Employee Engagement to evaluate the various indicators playing their parts in determining the role of teachers in higher education of the students in which he has mentioned that PCA describes the factor structure and their importance. (Pawar, 2016).

Another study has used the PCA technique in similar manner to calculate the quality of the universities all over the world for their qualitative outcome while evaluating the dimensional structure of the obtained dataset and reducing the large number of variables into a smaller set of linear combinations of data-set. (J.K.Kellow, 2004).

A distinction that is found between educational facilitation and accessibility outcome indicators shown by schooling and the input indicators for schooling is mostly measured by the means of a form of schooling infrastructure, legal compliances, absence of violence, regulation measures for teaching and other personnel in schools, etc. (P., Mullens, E., Moore, & T., 2000). Similarly, the schooling outcome involves the indicators like inclusive participation, various public-programme implementation, health, sanitation and safety measures, etc. (OECD, 2008). While considering all this on a macro level of the planning process, it is quite impossible to put down a significant framework of mechanism in the absence of a dependable measurement system. Micro-research in this area would be helpful to develop educational policy that will have realistic solution to growing Quality concerns regarding education sector and of its alignment to the other sectors like industrial sector, etc. driving national growth while attaining the predetermined thresholds. (Srinivas, 2011).

It is clear that the primary education system in India needs a complete make-over to restructure its basic perspectives towards education, school-governance-framework and the whole diverse and inequality-prone curriculum in rooted in the system for decades. Therefore, the long-term policy implications to innovate the newer education system would be the next target for India and its policy-makers. However, it must not be ignored that those long-term period policies will be hampering the present generation's students who would going to be the future citizens and decision-makers in India after this decade. Hence, nurturing this present generation in somewhat damaged schooling system must take place by placing shortly distant mile-stones on the way of long-term improvement by establishing short-term developmental policies involving indigenous-problem-solving attitude rather than centralized general solutions for everyone's problem in this diverse system.

Objectives:

This study mainly focusses on evaluating the School-Governing Index as a measure of governing quality of the primary education in the rural area (restricted for the area chosen for case study) addressing various education-related laws and schemes mandated by the government of India, the respective state government. The specific objectives are-

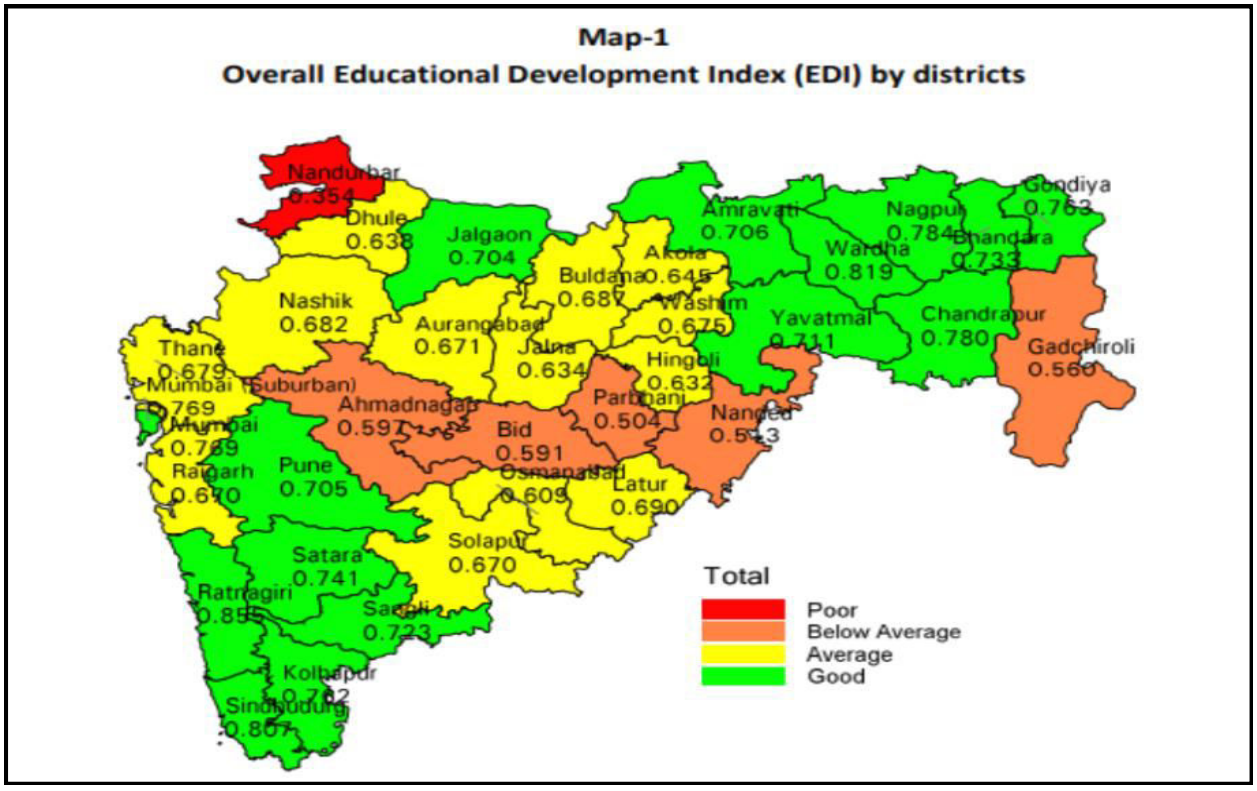
I. To evaluate the School-Outcome Index as a measure of outcome quality of the primary education in the rural area addressing the required outcomes to achieve the inclusive and equitable quality school-education and promote lifelong learning opportunities for all.
II. To construct a comprehensive comparative picture of the rural primary schools as per their governing and the school outcome based on the ranks the surveyed rural primary schools obtained through the formed indices.
III. To examine the associative relation and its strength between school-governance and school-outcome depending on inclusiveness and equality in school-accessibility.

Thus, to reach these targeted objectives, a primary survey has been conducted in Dapoli block in Maharashtra State in India.

Introduction to Sample Area and Sampling Methodology:

To address the research-question, the fresh data is needed directly taken out from the inside school-walls. Therefore, the block was chosen for the primary-data extraction through the primary survey of the head-masters of the rural primary-schools in the block which are falling

under two categories, namely, 1) Aided government-schools and 2) Aided private-schools. These are the schools where the local, state and central governments play the vital role of facilitation, funding, monitoring and governing the schools on regular basis. Comparing the rural area of Maharashtra narrowing down the scope, as per its educational statistics, it was found that –



(Source: http://www.dise.in/Downloads/best%20practices/EDI%20Maharashtra-2011-12.pdf)

Ratnagiri district (0.855) in Maharashtra state has shown top-ranked Educational Development Index for a decade till 2012 according to the DISE report. Even the table given below has been denoting the results of the infrastructure index of Maharashtra regarding educational institutions in which Ratnagiri still stands is second highest in Maharashtra, i.e., 0.857.

Top districts with school-infrastructure index			
Sr. No.	Rank	District	Infrastructure index
1	1	Gondiya	0.858
2	2	Ratnagiri	0.857
3	3	Raigarh	0.83

4	4	Nagpur	0.818
5	5	Kolhapur	0.751

(Table A: Top districts with school-infrastructure index)

(Source: http://www.dise.in/Downloads/best%20practices/EDI%20Maharashtra-2011-12.pdf)

The same block-wise EDI table denotes the higher performance of Ratnagiri district as:

Top districts with education development index			
Sr. No.	Rank	District	EDI
1	1	Gondiya	0.926
2	2	Ratnagiri	0.908
3	3	Ratnagiri	0.907
4	4	Ratnagiri	0.902
5	5	Ratnagiri	0.899

(Table B: Top districts with education development index)

(Source: http://www.dise.in/Downloads/best%20practices/EDI%20Maharashtra-2011-12.pdf)

The above results help to realize that even block-wise Ratnagiri district is showing remarkable results. Dapoli block is showing its EDI evaluated is 0.907, i.e., 3rd largest in Maharashtra state. Through tabulated results, it was clearly shown that, though the EDI and infrastructure index for education in Dapoli block from Ratnagiri district was better, its outcome from the education system ranks nowhere near top-rankers in outcome index. This might have caused either inefficiency in the school-working systems, inability to provide fruitful and employable education to the students or any other reason thereof. In the small villages of Dapoli Tehsil, the primary education is provided through 'Zilla Parishad' schools and through some private aided schools. Therefore, surveying these schools, teachers and other stakeholders and analyzing the data collected qualitatively and quantitatively to ascertain the education-disparity between public schools and private schools in Rural parts of Maharashtra while trying to construct the solution providing the recommendations to overcome this disparity between governance of the rural schools and the educational outcome while addressing the research question.

A focus group discussion was conducted with the panel of the three personnel who have been involved in the rural educational landscape of Dapoli since the last two decades and recognizes the schooling-conditions like back of their hand. Decision regarding which

schools are to be chosen for the survey is thoroughly based on their opinions and guidelines which was the outcome of the focus group discussion.

The schools that are surveyed were chosen on the basis of their distance from Dapoli tehsil – *Nagarpanchayat*. More and more scattered schools in the remote rural area around the whole block are tried to be surveyed through this one-on-one interactions. The twenty-one schools are chosen with wide variety of characteristics like schools with largest and the least enrolment in Dapoli block; schools having passed thoroughly and failed totally in all of the six-categories of the infrastructural development established under RTE.

The next step in the primary survey was to meet Block Development Officer (B.D.O.) and the education officer to get the official permission-letter for surveying the government-funded primary schools from Dapoli block. Their directives to maintain anonymity on part of schools and the name of personnel were considered while doing the survey and publishing the report.

The two types of questionnaires are prepared to get the primary data regarding School-governance and schooling-outcome. These questions are asked to the school-principals during school-survey. Together with that, the schools were observed with for their legal-compliance framework and infrastructural facilitations in Primary schools. Then, the both questionnaires for each school are scored and the data is processed in Microsoft Excel. This score is further classified according to the indicator-variables and their respective sub-indicators.

The Worldwide Governance Indicators (WGI) project[4] by the World Bank mentions aggregate and individual governance indicators for the period from 1996 to 2016, under the six dimensions of governance as 1. Voice and Accountability; 2. Political Stability and Absence of Violence; 3. Government Effectiveness; 4. Regulatory Quality; 5. Rule of Law; 6. Control of Corruption.

While considering these dimension to evaluate the school governance index, the indicators after the required modification, redefinition of these indicators as corresponding terms and the questions which are needed to be answered to get the data regarding these indicators are denoted according to the reports published namely, National Curriculum Framework (2005), Minimum standards for education report (2010), Sarva Shiksha Abhiyan report for Maharashtra (2016), ASER (2014), etc. These reports have become the base to formulate the

[4] Source of Information: http://info.worldbank.org/governance/wgi/#home

indicators and sub-indicators in form of variables in both aspects of School-governance and schooling-outcome to find their present status through the primary survey of 21 rural primary-schools from the selected block.

I. Voice and Accountability:

In terms of primary school-governance, 'Voice and Accountability' stands for being responsible and accountable, maintaining transparency, providing easy access, acting along the lines of the law, its regulations, being open to supervision, auditing while always acting in ethical manners.

Considering the depth of the subject and its multi-dimensional approach to the subject matter of research question, the sub-indicators in this indicator consist of:

a. Accountability towards teachers;
b. Accountability towards Government;
c. Accountability towards Parents;
d. Accountability towards students.

II. Absence of Violence:

There is no such a cumulative state-wise data which gives a broad picture towards the violence and stability measures. According to 'National commission for protection of child rights', absence of violence covers the variant aspects of safety and security along with the secure infrastructure, social discrimination and prevention of sexual abuse. The sub-indicators under this indicator are:

a. Secured infrastructure;
b. Social discrimination;
c. Treatment from teachers;
d. Prevention of sexual abuse.

III. Regulation for quality and effectiveness:

The Regulation for quality and effectiveness is the responsibility on the school-administers' shoulder to regulation the day-to-day functioning of school on basis of pre-determined norms so that the school would be able to meet and maintain adequate quality criteria as mandated through the laws and standardized rules. The sub-indicators for this indicator consist of:

a. Number of Teachers and classrooms;
b. Working Hours and rescheduling;
c. Non-teaching staff;
d. Budget, Grants and expenditure.

IV. Legal compliances and corruption-curbing mechanism:

The Legal compliances facilitate the school's functioning with all relevant and applicable legislation and to reduce any risk of non-compliance through penalties. The sub-indicators under this indicator are:

a. Development-oriented legal compliances;
b. Schemes implementing;
c. Risk-management;
d. Corruption-curbing measures.

Whereas, the indicator-variables which are chosen for Schooling-Outcome Index which paint a comprehensive scenario of equality and inclusivity-oriented outcomes through the school-access in various dimensions are explained with the following listing.

Section A: Location and Campus Safety;
Section B: Teaching faculty and classroom facilities;
Section C: Sanitation and students' health safety means;
Section D: Mid-Day Meal scheme operation;
Section E: Inclusive participation

Concerning these sections together, the questions were prepared and asked to the school-principals. These observation and binary-type questions give a very short and precise answers about the schooling outcome where every section, every variable, apart from the section five consists of five questions whereas the last section includes ten questions.

Since, one of the main difficulties while interpreting data with more than two variables is the problem of visualizing the whole data-frame in interpretable size, such kind of a difficulty can be solved by substituting a group of the variables with a new single variable. One variable might be measuring the similar driving principle prevailing the behavior of the data-framework and system. One of the methods for this reduction in the variables is Principal Component Analysis (PCA).

PCA which belongs to factor-analysis approaches, applies the calculations to find the principal components of the data. Principal components are the fundamental structure in the data, i.e., they are the directions with the most variance and where the data is most sprawling. This method evaluates the new set of variables which are called as principal components which form a linear combination of the original ones. Each of the principal components is chosen in such a manner that it would be describing most of the available variance. All principal components are orthogonal to each other; therefore, there is not interference of redundant information. The first principal component would be with the maximum variance among all the possible choices in data-frame. (Jolliffe, 1986).

To obtain the meaning results, The Kaiser-Meyer-Olkin (KMO) has done which would evaluate the degree of sampling adequacy. This measure diverges in the range of 0 to 1 whereas the values which are nearer to 1 are considered as better. This test convey the minimum standard to carry on PCA proceedings (Korjus). Similarly, the Bartlett test is also done for the same purpose. The Bartlett test is used to verify the assumption that variances are equal across groups or samples with the null hypothesis that the batch variances are all equal.

Firstly, the sub-indicator scores are measured for the two kinds of scores obtained through the primary survey of the 21 primary schools from Dapoli block. After entering the necessary data into excel format, the tool of data editor is used to import the data in Stata-software to evaluate the dimensions and the further reduce them to ascertain the composite index.

The stages then performed to evaluate the index using PCA technique are as follows:

Stage 1: This stage involves examining the eigenvalues to determine how many principal components should be considered.

Stage 2: The principal components score is evaluated. This ‘translation of the random variables’ is a standard procedure which uses the difference between the variables and their sample means rather than considering the raw data obtained.

Stage 3: The correlation between the original data points and each principal component would be helpful and necessary to interpret each component. The correlations are acquired using the basic procedure. All principal components would be having the mean zero..

Stage 4: The principal components which are significant if show sound correlation values while impacting the data, then these components are multiplied with the original variable to get the fixed value of index.

Stage 5: Based on these values of both School-governance index (SGI) and Schooling-outcome index (SOI), the schools have been ranked and ranks are assigned to them as per their codes.

Then, Spearman's rank correlation coefficient is evaluated using the ranks obtained for the schools for two different indices – SGI and SOI. The value of coefficient can take values in range of +1 to -1. Positive indicator shows a perfect association of ranks, 0 denotes no association between ranks whereas negative indicates a perfect negative association of ranks. Closer the value is to zero, the weaker the ranks' association between each variable.

Apart from this quantitative analysis, the other technique of qualitative analysis of primary school-governance and schooling outcomes is used. For the collection of qualitative data, expert interviews are conducted and the conclusions are derived based on their opinions about the schooling system, their governance and the changes that must be made to drive out the better outcomes for equal and inclusive school-access to every child. These interviews are conducted with the following experts like, Dr. Nachiket Thakur (Director-Science and Technology Park), Dr. Savita Kulkarni (Assistant Professor - GIPE), Mrs. Bhagyashri Karmarkar (Vise-principal, Jeevanjyoti Science College), Mrs. J. Krishna (Teacher and counselor), Mr. Abhijeet Joglekar (Educationalist and teacher at primary school). All these personnel have expertized in the education sector with their hard-work for the last decade. The required data interpretation, observations, policy-recommendation and the conclusion through this case-study is put forward as per the calculations as well as qualitative analysis of the expert interviews conducted.

Data Analysis and Interpretation:

I. Quantitative analysis of data:

After obtaining the school-wise ranks following above methodology, the data is interpreted as follows:

School Governance Index (SGI)

The School Governance Index is evaluated using the basic Principal component analysis and the results obtained are used to formulate the index. The coefficient matrix for PCA is evaluated as:

Correlation Matrix					
		Ac_Voice	Ab_Violence	Re_quality	Legal_comp
Correlation	Ac_Voice	1.000	.628	.638	.557
	Ab_Violence	.628	1.000	.682	.740
	Re_quality	.638	.682	1.000	.694
	Legal_comp	.557	.740	.694	1.000
Sig. (1-tailed)	Ac_Voice		.001	.001	.004
	Ab_Violence	.001		.000	.000
	Re_quality	.001	.000		.000
	Legal_comp	.004	.000	.000	

(Table C: coefficient matrix for schooling governance index)

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.972	74.302	74.302	2.972	74.302	74.302
2	.463	11.574	85.876			
3	.320	8.000	93.876			
4	.245	6.124	100.000			
Extraction Method: Principal Component Analysis.						

(Table D: table explaining variance and eigenvalues)

The coefficient matrix and variance levels of the components with their eigenvalues explain which of the all indicators in form of components play the significant role to assign the proper weightage to the data-set components. Tables C and D have been showing that how the variable-indicators considered here, are correlated with each other whereas the first component for the outcome is greater than one (2.972) and is enough to formulate a

composite index as it is greater than one. Though the percentage of variance is higher, the further results are in sound shape to explain the school-governance.

The next step in the analysis of schooling-governance is the KMO test as well as Bartlett test.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.816
Bartlett's Test of Sphericity	Approx. Chi-Square	39.714
	Df	6
	Sig.	.000

(Table E: KMO and Bartlett's test)

As mentioned earlier, even the KMO test-results are considered, the resulted KMO outcome value is denoted as 0.816 which indicates that the sample is adequate to explain the data set. Even the critical value of chi-square distribution being lesser than the actual one, we reject the null hypothesis of the data-variables having equal variances.

Component Score Coefficient Matrix	
	Component
	1
Ac_Voice	.273
Ab_Violence	.299
Re_quality	.295
Legal_comp	.293
Extraction Method: Principal Component Analysis.	

(Table F: Components to form PCA)

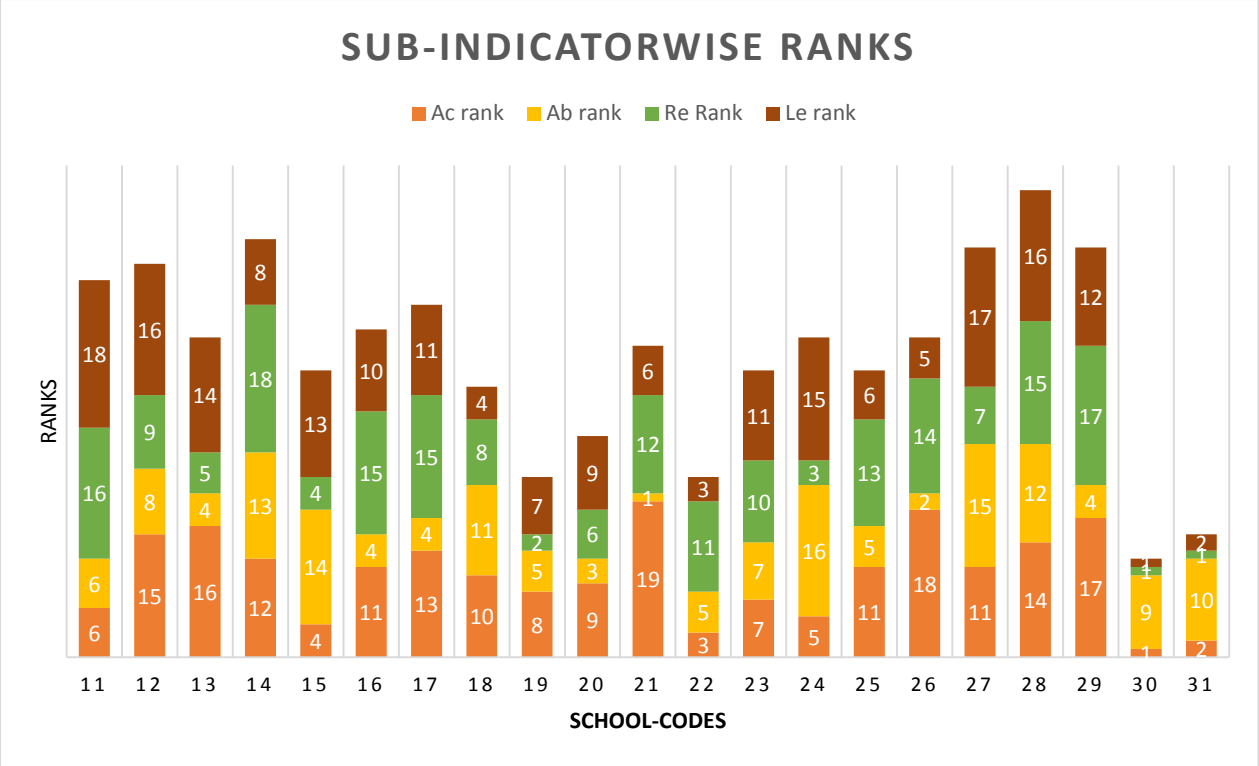
Hence, using the components values given in table F, they are multiplied with the actual variables to form PCA index based on School-governance indicators which is given as follows:

School-code	**School-Governance Index (SGI)**	**School-rank**
30	4.724483	1
31	4.287921	2
22	1.316971	3

19	0.845326	4
15	0.667877	5
18	0.377578	6
24	0.339073	7
25	0.047173	8
16	-0.43553	9
13	-0.45348	10
14	-0.46192	11
20	-0.51916	12
23	-0.56531	13
17	-0.56749	14
12	-0.93618	15
26	-1.05405	16
29	-1.11647	17
27	-1.21986	18
28	-1.59699	19
11	-1.74951	20
21	-1.93045	21

(Table G: SGI and Ranks)

The school codes 30 and 31 are those schools which are private aided schools whereas all others coded from 11 to 29 numerically are public schools under local governance of Zilla Parishad. From the above table E, we can say that School coded as 30 and 31 are getting first and second ranks consecutively, the next three school codes are 22, 19 and 15 whereas the schools getting lower scores are schools coded as 29, 27, 28, 11 and 21.



(Sub-indicator-wise School-governance ranks)

The chart above shows that school-governance with the schools coded from 11 to 29 are showing more or less similar governance index ranks which effectively shows that more the colored fields, worse is the performance.

In the context of the Voice and Accountability, again schools numbered as 30 and 31 are showing better ranks with less blue-colored spread whereas the school numbered as 21, 26, 29 and 13 are showing quite lowered performance. In the Political stability and Absence of violence, school numbered 21 and 26 are top rankers considering the political interference and the violence happening in school between students whereas schools numbered as 24, 27 and 15 are the lowest scorer.

In the Regulation for quality and effectiveness in the schools, school numbered as 30 and 31 lurches forward way ahead even if the absolute values are considered. Whereas the schools numbered as 14, 29 and 11 are quite behind in this section showing that they are failing to maintain the regulated quality of schooling-governance. In the legal compliances and corruption-curbing mechanism - again school numbered as 30 and 31 are on top whereas the school numbered as 11, 27 and 28 showing that there is lack of legal compliances in public school due to heavy workload of non-teaching works in the schools due to absence of non-teaching staff.

School-Outcome Index (SOI):

Though the educational outcome becomes the significant constituent of schooling quality measure, there are other equally vital constituents of the schooling quality which boost up the outcome regarding school-accessibility, equality and inclusivity, directly and indirectly. For example, inclusive participation, condition and quality of teaching faculty and classrooms, school-environment, etc.

The schooling outcome index is evaluated using the basic Principal component analysis and the results obtained are used to formulate the index. To find the principal components, first the coefficient matrix is evaluated as:

Correlation Matrix						
		loc_safe	Teach_class	san_health	Mid_day	Participan
Correlation (Variables)	loc_safe	1.000	.361	.587	.268	.322
	Teach_class	.361	1.000	.409	.395	.543
	san_health	.587	.409	1.000	.306	.140
	miday	.268	.395	.306	1.000	.229
	Participan	.322	.543	.140	.229	1.000
Sig. (1-tailed)	loc_safe		.054	.003	.120	.077
	Teach_class	.054		.033	.038	.005
	san_health	.003	.033		.088	.273
	Mid_day	.120	.038	.088		.159
	Participan	.077	.005	.273	.159	

(Table H: correlation matrix for schooling outcome variables)

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.443	48.856	48.856	2.443	48.856	48.856
2	.981	19.615	68.471			
3	.776	15.521	83.993			
4	.492	9.834	93.827			
5	.309	6.173	100.000			
Extraction Method: Principal Component Analysis.						

(Table I: total variance explained by the variables)

The coefficient matrix and variance levels of the components with their eigenvalues explain which of the all indicators in form of components play the significant role to assign the proper weightage to the data-set components. The tables H and I explain the relation and variance between the components and variables showing that how the variable-indicators considered here, are correlated with each other whereas the first component for the outcome is greater than one (2.443) and is enough to formulate a composite index as it is greater than one. Though the percentage of variance is higher, the further results are in sound shape to explain the schooling outcome. The next step that was conducted in this analysis of schooling-governance is the KMO test and Bartlett test.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.639
Bartlett's Test of Sphericity	Approx. Chi-Square	22.141
	df	10
	Sig.	.014

(Table J: KMO and Bartlett test showing significance of data)

As mentioned earlier, even the KMO test-results are considered, the resulted KMO outcome value is denoted as 0.639 which indicates that the sample is adequate to explain the data set. Even the critical value of chi-square distribution being lesser than the actual one, we reject the null hypothesis of the data-variables having equal variances.

Component Score Coefficient Matrix	
	Component
	1
loc_safe	.303
Teach_class	.323
san_health	.292
miday	.248
Participan	.257

(Table K: Component Score Coefficient Matrix used for calculation of index)

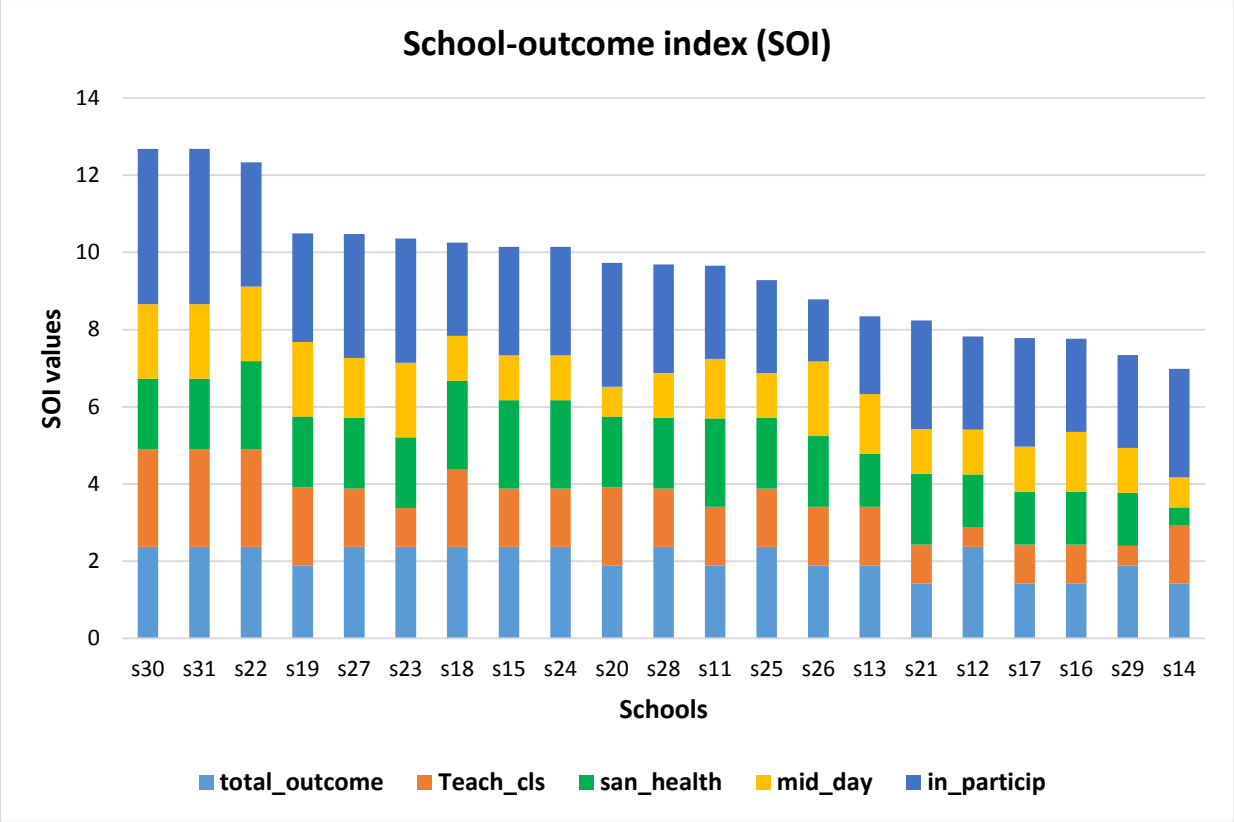
Hence, using the components values given in table I, they are multiplied with the actual variables to form PCA index which is the further step in which the actual set of PCA based Schooling-outcome indicators is evaluated and ranked further which is given as follows:

School code	**Schooling-Outcome index (SOI)**	**Ranks**
11	0.182359	9
12	-1.42228	14

13	-1.04683	13
14	-2.79091	19
15	0.67749	7
16	-1.79665	16
17	-1.89683	17
18	0.832002	4
19	0.805187	6
20	-0.05691	10
21	-1.42263	15
22	2.590774	2
23	0.810692	5
24	0.67749	7
25	-0.07749	11
26	-0.47245	12
27	0.865026	3
28	0.203286	8
29	-2.01759	18
30	2.678131	1
31	2.678131	1

(Table L: Schooling outcome index and ranks)

Table L shows the schooling outcome index with the ranks which are given to the coded schools. School numbered as 30, 31 and 22 are top rankers in giving the better quality schooling outcome based on indicators such as Location and Campus Safety; Teaching faculty and classroom facilities; Sanitation and students' health safety means; Mid-Day Meal scheme operation and Inclusive participation. But the schools coded as 14, 29 and 16 are lowered in its ranks showing that the schools are lacking in their schooling-outcome performance where the above mentioned outcome variables are concerned. The sub-indicator-wise schooling outcome index (SOI) is graphed according to the sub-indicator wise value obtained for the schooling outcome separately for the twenty-one surveyed schools. The graph is showed as:



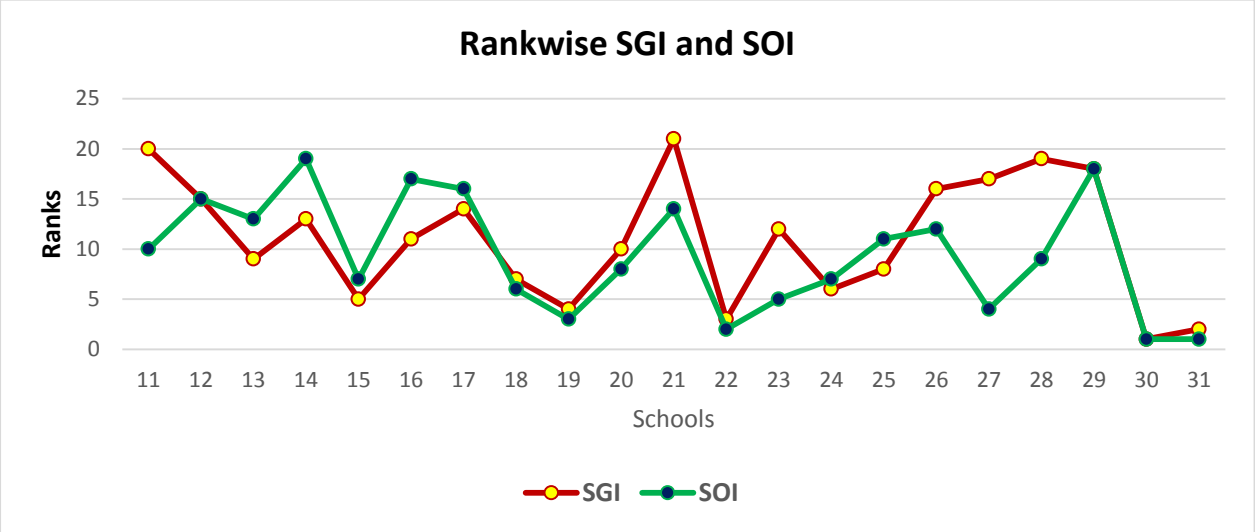
The graph above denotes that constantly, in every indicator, both of the aided private schools are giving quite good results as compared to other public Z.P. schools. It is denoted that most of the schools are showing better performance in the first indicator, i.e., location safety of the school for all of the students to give them fearless access to school which closely reveals the desired result addressing SDG 4.

Considering the second indicator of teaching faculty and classroom facilities, aided private schools though, are showing better results, still the absolute values of index are denoting worse performance for all the schools meaning that schools are failing on the level of teaching and classroom-facilities outcome creating disincentive for the students and parents to go to schools.

The third indicator explaining the health and sanitation facilities' outcome, the overall index value which mandatorily should be best among all is quite low as compared to other outcome indicators. It denotes that these schools are failing in providing healthy and sanitized education environment to the students, especially, making it very difficult for girls and differently abled students to attend the schools regularly. Similarly, the forth variable - the mid-day meal schemes' operational outcomes based on the legal compliances and the funding

by government are showing not so great and noticeable outcomes even for all of the schools survey. For the fifth outcome indicator – inclusive participation, the private aided schools have indicated better performance as compared to the other public primary schools from the block.

The next step of this analysis leads to the determining the correlation between these ranks found through the indices values for the school with the use of Spearman's rank correlation coefficient using the basic calculations in excel. If the ranks of school-governance index (SGI) and schooling-outcome index are compared with each other for every schools, the resulted graph is denoted as:



Apart from 2-3 schools, all other schools are showing similar rank distribution of outcome as like the one for school-governance. There is need to see whether there is correlation between this ranking results of school-governance and the schooling outcome. Therefore, Spearman's rank correlation coefficient is evaluated to find the correlation between these ranks depending on both the indices formed which based on the primary survey of the schools. The results obtained through the basic excel calculated as follows:

$$r = 1 - \frac{6\sum d^2}{(n^3 - \mathrm{n})}$$

The result received through calculations are as:

Spearman's rank correlation coefficient

$\sum d^2$	597
Numerator = $6\sum d^2$	3582
n	21
n^3	9261
Denominator = $(n^3 - \text{n})$	9240
$6\sum d^2/(n^3 - \text{n})$	0.387662
r	0.612338

(Table M: Spearman's rank correlation coefficient calculation)

Through the above table, it is clearly seen that Spearman's rank correlation coefficient between school-governance index and schooling outcome index is positively related with the coefficient value, 0.612338. Even if the coefficient found is compared with the critical value from the Spearman's critical value table, mentioning as r (0.612338) is greater than the critical value of r (0.370) at 5% significance level, the null hypothesis is rejected proving that there is strong correlation between both indicators. Though this indication is not restrictive to show the linear relationship between the two variables are chosen which actually is hard to prove due to the multi-dimensional spread of the data, this indication does prove the monotonic association between the two variables considered here, proving that there is stronger relation between the governance performances of the schools based on various variable-indicators and the schooling-outcome which arises through better governance of the schooling system.

It clearly denotes that if the higher rank in the governance is obtained then, the higher rank would be obtained in outcome of achieving school-access through equality and inclusivity. It addresses the objective of this research by giving a small window to look through towards the repairing solution to reduce the problem deteriorating rural primary schooling system through better policy-conversions addressing these gaps coming out of indices of the schools. Addressing these gaps is not just the policy-making for the sake to improve the education statistics, but such indigenous steps can become the path to address the requirements in primary education-system on regional, state as well as national level in India.

II. Qualitative Analysis of Data:

This research involves huge amount of qualitative interaction with the education – experts who have experience of so many years in field of education and of solving the problems of the local teachers, head-masters, parents and students.

Every school headmaster from the school (or the head-teacher in case of non-appointment of headmaster) has mentioned the results of the SSA and RTE are showing positive impact on the participation of the students in the schools. Students have become more attentive because of the change in the attitudes of their parents and the rise in the freedom given to the girls by their parents to pursue the school-education under the attention of their female-teacher in the schools.

The school coded as 22 which ranks 2nd in the schooling-outcome index and 3rd in the school-governance index as well as first in both of the indices if only pubic rural primary schools are considered, had started quite an intriguing campaign in the village where it is situated by making aware the villagers about the primary school and the government initiative for the students and parents if these potential students were to attend the same public school. The results of this campaign has shown quite a positive impact that the villagers took the oath to admit all of their children in that school and further to take extra efforts to develop the school-infrastructure by participating *Shramadaan* (Contribution of voluntary labor and money) program commenced by the school.

But, also the headmasters of all these schools had mentioned the concerned towards the double work that the teaching faculty and the headmaster have to do as they have to maintain online and offline records which requires two different type to be kept increasing non-teaching work-load on teachers. Also, the work is quite redundant and time-consuming for teachers which hampers the teaching hours and teaching quality.

One of the main concerned that was pointed out during such interviews was the reduction in number students has started taking toll on the reduction of the effectiveness of the government-proposed schemes as the teachers have to maintain the same lengthy records and follow all the same time-consuming processes for the schools with fifteen students in standard first to seventh as like those schools having 900 students. It reduces the teachers' time to teach and to provide stuudents the personal attention.

As mentioned by J. Krishna during her interview, she thought that in India, 'a fish is taught to learn to run the marathon for a while that it loses his ability and confidence to swim in ocean'. In simpler words, every child is tried to be taught with every possible piece of

knowledge regardless of paying attention whether they have that subject-specific IQ or not. The relevant relationship between the educational output and his future is quite insignificant making the demand siders in education system to lose their interest in accessing schools.

On school level, addressing the inequality directly is impossible, but reducing school-level inequality between the students can be useful to at least retain and even if not increase the attendance in the schools by considering easy measures like small ceremonial events at schools rather than creating huge campaigns, schemes and programs.

To address the issue regarding the increasing burden of the non-teaching assignments hampering teachers' teaching involvement and educational outcome, it was suggested that these schools must be run in a span of "five-days-a-week" while keeping Saturday as half working day aside for this non-teaching works. Lastly, the importance of improving and universalizing the curriculum is thoroughly discussed which has led this discussion in the direction of inclusion of vocational training and practical work-training even for a very little purpose in the primary schools would be very nurturing to broaden the thinking and decision-making ability of that student in his future life.

Base on this quantitative and qualitative analysis of the data obtained, this research paper, further, would try to make some recommendations for different stakeholders functioning at different levels which are practical and achievable through as little economic efforts, system's flexibility.

Conclusion:

Inclusive and equitable growth from multiple development dimensions are aligned to the center of school-education and its accessibility to the every single child in the country regardless of their location, gender and disabilities. The same intention has backed this research paper through the proposed research question through evaluation of the school-governance index (SGI) and Schooling-outcome index (SOI).

It has become necessary to self-inspection and the system audit on the zero-ground to improve inclusivity and equality of schooling-access to ascertain and put forward the indigenous policy-prescription through short-term and long-term recommendations.

Recommendations for Outcome Based Teaching:

- ✓ Teachers should plan their lessons in such a way that with the available time-frame, the curriculum would be enough to explore the world from a classroom.
- ✓ They should bring in the innovative approach of teaching with the new technology to improve students' participation, such as conducting a house-trip to every student's home to improve their social awareness to reduce inequality among them.
- ✓ They should cherish more discussions in the classroom making students curious while enabling them to ask various questions without suppressing their voice.

Recommendation for School-Management Committee:

- ✓ The committee regulating the school-functioning should improve the infrastructural status of the schools to improve the health and sanitation conditions as per MDM scheme regulations, National building code, UNCRC and CWSN regulations to make schools more accessible.

Recommendation for Local-Governing body:

- ✓ It should keep the schools and the teachers well-updated regarding the new technology and the new teaching approaches with help of the teachers' training-sessions and the evaluations of the teachers based on the same which would stand as certification of updating their knowledge.
- ✓ Making the school-uniforms similar to every student and teacher, even if they are from different schools so that there will be strong representation of equality among students.
- ✓ They should create the "hub – spoke arrangement" to circulate the educational data, software and other materials for schools, teachers and students while centering its full origin at the Central Office of Tehsil freely accessible to everyone to avoid the connectivity-problems in remote-villages.
- ✓ For the creation of the disable-friendly infrastructure as mandated by Central Public Works department and by other norms must be followed in the schools to make them accessible for differently-abled students and teachers.
- ✓ The framework of the schooling system must establish the employment-path for the students providing the required employment skills in them like mandated vocational training from the early upper-primary schools. It would enable the students to explore their interest for the future economic activities, while keeping them soundly graded in the curriculum-based tests while improving school-access.

- ✓ Establishing the industry to school education linkages while structuring new universal curriculum for the students would definitely help for improvement of access and outcome which have been successfully implemented in Germany.
- ✓ Recruitment of necessary and required number of female teachers or at least repositioning them so that at least there will be one female teacher in small schools for sustained attendance of girls Recruitment of Special teachers in the schools according to the number of differently abled students in the schools.
- ✓ There must be promotion and implementation of the students' knowledge stimulating programs like Tinkering Lab (ATL), '*Tod-Fod-Jod'* (TFJ) Center with a lot of handling material of the science-experiment and other materials which would motivate students to create new things, innovate new techniques by themselves in these labs and through the field visits to Industry, labs and other public places.

The key role for the individual state is to improve their administrative and political decentralization to find the root-cause of the educational issues of the individual regional areas separately to find the solutions. It would help to reduce the educational inequality while improving the school-accessibility for all children and their attendance. Therefore, opening the schooling system to anybody and everybody to improve his own life-standard while improving the whole countries' primary schooling-governance would enable the present and future population to live more self-sufficient dignified life with the "*T.A.I.P.E.E." framework* of schooling consisting:

- Transparency in the functioning and handing responsibilities, funds and appropriate amount of authority in schools;
- Accountability for every decision and every action;
- Inclusion of all beneficiaries through agency cohesion of the schooling system;
- Participation of all stakeholders;
- Ethics-driven code of conduct;
- Efficiency-enhancement of the functioning of schooling-system.

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