

Effectiveness of Elementary Education Curriculum in some CBSE schools of Patna with respect to teacher motivation and student achievement

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Abstract

Curriculum is the guidemap based on which any formal education program is conducted. It can be considered as the totality of the knowledge and skills that the students are expected to learn in class as well as outside class as part of formal education. The curriculum implemented in primary classes is prescribed by Examination Boards such as the Central Board of Secondary Education (CBSE) in India. The implementation of the curriculum varies between schools because of local factors. For curriculum to be effective several conditions have to be satisfied. So it is meaningful to talk about the effectiveness of curriculum. Teacher motivation is an important parameter related to implementation of the curriculum because it is teachers that ultimately implement the curriculum. It is expected that the teacher's own sincerity towards work, seriousness and work motivation will have a role to play both in forming an opinion regarding the curriculum, and in shaping its implementation. Student Achievement is a measure of the amount of academic content that the student learns in a determined amount of time. It is one of the parameters by which the quality and performance of a school is judged. In the present paper, academic performance has been used as a measure of student achievement. For this the summative assessment grades of the students have been used. For assessing Teacher Motivation and Effectiveness of curriculum five point Numerical rating scales were constructed, and tested for validity and reliability. For testing validity, a part-whole correlation was carried out and the final rating scale was prepared on its basis. Reliability testing was done using split half method. The annual summative assessment scores were used as a measure of student achievement. Data was collected from three Government schools and four Private schools. The study showed a positive correlation of effectiveness of curriculum with both teacher motivation and student achievement. It was also observed that students whose parents had had higher education scored better in their examination. Poor family economy was detrimental to student performance. Although the difference between teacher motivation in Government and private schools was not significant, the students from private schools performed better in the examinations.

Keywords: Elementary education, Effectiveness of curriculum, Teacher Motivation, Student Achievement.

Introduction

Curriculum refers to the academic content that is taught in a school. It can be considered as the totality of the knowledge and skills the students are expected to learn in class as well as outside class as part of formal education. According to the Indiana Department of Education (2010) Curriculum refers to the planned interaction of pupils with instructional content, materials, resources, and processes for evaluating the attainment of educational objectives. The curriculum can be considered as a guidemap in which the lessons that the teachers teach, the assignments and projects given to students, the books

and other materials used in the course, the tests and other methods used for evaluation, etc. are specified. The curriculum of a school includes the syllabus, the teaching methods, and co-curricular activities that are followed in the school (Stabback, 2016). Some scholars consider curriculum to be the actual implementation of whatever is prescribed. For instance, Hass (1987) considers curriculum as the set of actual experiences and perceptions of the experiences that each individual learner has of his or her program of education. Silva (2009) gives emphasis to what students can do with knowledge, rather than what units of knowledge they have, as the essence of 21st-century curriculum. Glatthorn et al. (2016) have given a definition of curriculum in very general, although abstract terms. According to them, the curriculum consists of the plans made for guiding learning in the schools, usually represented in retrievable documents of several levels of generality, and the actualization of those plans in the classroom, as experienced by the learners and as recorded by an observer; those experiences take place in a learning environment that also influences what is learned. Even though there is a common prescribed curriculum in the sense that schools basically follow the curriculum that is recommended by their affiliating body, there is a lot of flexibility in the implementation. The schools make their own improvisations and modifications in the curriculum due to practical reasons if the management and the teachers feel the necessity.

In India, the Central Board of Secondary Education (CBSE) is the main Examining Board that comes under the purview of the Central Government and a large number of schools are affiliated to it. These schools follow the curriculum recommended by the CBSE Board. The Board maintains uniformity in syllabus among the affiliated schools. It also provides guidelines for the implementation of its syllabus. But there are differences among the schools in the implementation of the syllabus. Every school has its own way of doing things and its own style of functioning which has strengths as well as limitations. Over the years, the schools develop their own work culture, style of functioning, their own traditions which creates an ambience that is the sum total of the impression they create among the students, the parents and the society. This ambience includes the school traditions, the day-to-day transactions of the teachers and staff members, various school activities, and numerous gross and subtle impressions that the daily transactions of the school make on the virgin minds of its young students as well as on the society in general. The variation in the individual styles of the teachers and other members of the school mainly accounts for the variability of the curriculum. But if we want to quantify these variations, then we must use some scale. One possible method for measuring effectiveness of curriculum could be the quantification of teacher's perception regarding the curriculum followed. According to Gansle et al. (2006) and Kauser & Akhtar (2012), teachers generally develop their own impressions about the curriculum and its effectiveness. These impressions affect their individual working styles, their working habits and the expectations of the school (Doherty & Travers, 1984). These impressions depend on regional, social and other factors (Onyia et al., 2016). A study of Teacher's perception of curriculum gives useful insights (Altaieb, 2016, Awofala et al., 2012). It is expected that the teacher's own sincerity towards work, seriousness and work motivation will have a role to play not only in forming an opinion regarding the curriculum, but also in shaping its implementation.

Motivation is often defined as the force that account for the arousal, selection, direction, and continuation of behavior. Teacher motivation can be defined as the willingness, drive or desire to engage in good teaching, which is furthermore *acted upon* (Michaelowa, 2002). In this definition, "Good teaching" means adherence to professional conduct and efforts to help students learn to the best possible extent. There is a great variation in the definitions of motivation. This is because of the complexity of the concept, and also because many authors tend to define motivation in terms of specific theories. However, there appears to be general agreement that motivation activates human energy, that it is a force that leads people to attempt to satisfy their needs, that all human behavior is motivated to some degree, and that the critical factor is the direction of the motivation (Stembridge, 1989).

Motives cannot be seen. They can only be inferred from behavior. There are two basic elements that are evident in the concept. Firstly, motivation implies movement. In fact the term motivation is derived from the Latin *movere*, meaning to move. Secondly, motivation can be directed. Thus Human motivation is the process by which the behavior of an individual is energized, sustained, and directed so as to meet individual needs and achieve organizational objectives (Lai, 2011). Teacher motivation can be defined as "the willingness, drive or desire to engage in good teaching" (Alam, 2011). The act of teaching and the inter-personal communication of knowledge gives the teacher personal joy and pleasure. According to Eble (1978), "For academic men and women, that kind of self-realization does not come from merely meeting classes and producing articles, but from deriving from their work a deep pleasure for which the word joy is not only appropriate but clinically accurate". Zimmerman (1968) has observed that a typical motivated teacher has a motivational structure with (a) high educational expectancy, (b) low economic motivation and financial expectancy, (c) a felt need of high ethical standards, (d) a need to communicate facts and ideas to others on an interpersonal level. Good teaching also includes adherence to professional conduct and making efforts to help students learn as best as the teacher can provide. Job satisfaction, self-efficacy, and personal achievement are dynamic components of teacher motivation that both drive and are driven by teacher motivation in a virtuous cycle. When convinced of the effectiveness of improved teaching methods, the motivated teacher utilizes these methods as part of his or her effort to help students learn to the best extent possible (Guajardo, 2011). Bess(1977)has remarked that "better teaching will follow from motivated faculty - faculty whose most important needs are being met continually". Teacher motivation is important because it leads to substantial qualitative improvement in the students (Eggleton, 1992).

Student Achievement is a measure of the amount of academic content that the student learns in a determined amount of time. It is one of the parameters by which the quality and performance of a school is judged. Student achievement can have several dimensions, some of which are, (1) Academic - Students should be able to obtain, understand, analyze, communicate and apply knowledge and skills to achieve success in school and life, (2) Essential Life Skills and Character - Students should demonstrate the aptitude, attitude, and skills to lead responsible, fulfilling, and ethical lives, and (3) Mastery of Knowledge and skills - Students should demonstrate High-level thinking and working, acquire personal qualities required for contributing their share towards an effective and productive community and fulfilling the common good of all (Expeditionary Learning, 2014). Ideally, student achievement should be judged by student's development along all these dimensions (Huitt et al., 2009). But in most cases we restrict ourselves to the academic dimension because the school systems of today are giving much more importance to academic achievements as compared to life skills and community responsibilities. Also, there is certain tentativeness as to what is possible and what is not in such matters (Bernaus et al., 2009). In fact, these issues are more difficult to quantify and evaluate, so there has been less amount of serious work in this direction. Ideally, the assessment of student achievement should include parameters pertaining to cognitive, affective as well as psycho-motor dimensions. But for practical reasons, we have to limit ourselves mainly to cognitive domain.

Most of the schools in Patna are affiliated to either the CBSE (Central Board of Secondary Education) or the BSEB (Bihar School Examination Board). Although these Boards have identical syllabi, their prescribed textbooks are different. Textbooks recommended by the CBSE have been developed by the NCERT. The Central Government funded schools including Kendriya Vidyalayas and Navodaya Vidyalayas are affiliated to the CBSE. A number of privately owned schools are also affiliated to the CBSE. The CBSE Board examinations are conducted at Class Tenth and Class Twelfth Levels. In the present age of competition, schools strive for better academic performance which is one of the important measures of student achievement. A school whose students display a balanced all round competence would be called a high performing school. Such school displays a high level of student

achievement. On the other hand, for a low performing school, the student achievement is expected to be low. In the present age of competition, most of the schools strive for better academic performance because this is the demand of the time. For such schools, the amount of academic content a student learns in a determined amount of time would be the measure of student achievement. There are other schools that work with a broader vision. They try to take care of other aspects of education besides academic performance. For them student achievement would also include inculcation of life values and life skills. There is no single standard definition of student achievement. Still, it can be considered as a multidimensional entity. Coleman et al. (1966) have described student achievement in terms of those life skills which enable the student to face life's different situations. Huitt et al. (2009) have studied the academic aspects of student achievement and developed a multi parameter framework for its improvement. There have been other studies also related to student achievement. Kane and Staiger (2008) have studied the impact of teachers on student achievement. Rowan et al. (2002) have compiled various results of large scale surveys related to the impact of teachers on student achievement. A different kind of study was conducted by David W. Grissmer (1994) who investigated the extent to which student achievement was affected by school resources. Ruth Zuzovski (2009) has investigated whether teacher's qualification has any effect on student achievement. There have been numerous other studies on student achievement worldwide, which also suggest that student achievement is affected by cultural and demographic factors. But so far, very few such studies have been conducted in India and it would be interesting to understand the scenario at local level.

Although using academic performance to judge student achievement has limitations, the parameter is important from the viewpoint of most schools. One advantage of using the Board results of students as a measure of student achievement is that they are easily accessible and have a nationwide uniformity. Every school keeps a record of the performance of its students. In small scale studies, there are several constraints. So one's choice regarding design of experiment gets limited. In such a situation we can consider Board examination results as an indicator of student achievement.

Method and Validation

The present paper is a report of our research work regarding effectiveness of Elementary Education curriculum and its relation with Teacher Motivation and Student Achievement. The study was carried out in seven CBSE-affiliated schools of Patna. Teachers from three Government owned CBSE schools, and four Private owned CBSE schools participated in this study. The three Government schools chosen for this study were Kendriya Vidyalaya schools at Kankarbag, Bailey Road, and Danapur Patna and the four Private owned schools were DPS Patna (Primary section), Litera Valley school, Keshav Saraswati Vidya Mandir and St. Michael's High school (Primary section) Patna. A School survey method was employed for this study. Purposive sampling was chosen because random sampling was not practically feasible. Also, the present study was of an exploratory nature and the resources available were limited.

Three main variables were considered in this study, namely, Effectiveness of Curriculum (Independent variable), Teacher Motivation (Dependent variable) and Student Achievement (Dependent variable). There were several background variables. For teachers who participated in this study, the following background variables were taken: (1) Gender, (2) Age, (3) Marital status, (4) Academic Qualification, (5) Professional Qualification, (6) Teaching experience, and (7) Management (Government or Private). For students, the background variables taken were (1) Gender, (2) Management, (3) Parents' Economic status, (4) Parents' Education, (5) Class in which the student is studying.

Two five-point numerical rating scales were constructed, one for assessing teacher motivation and a second one for assessing effectiveness of curriculum. These were constructed so that they would be rated by teachers of different schools. For constructing the rating scales, statements related to

different aspects of curriculum and Teacher motivation were collected from various sources and compiled together. A total 130 statements related to different intrinsic, extrinsic and contextual factors of Teacher Motivation were compiled while 57 statements were compiled which were related to the effectiveness of Curriculum. Each statement was set for a 5-point grading scale. The statements had to be rated as per [Strongly disagree, disagree, neutral, agree, strongly agree] which were respectively assigned [1, 2, 3, 4, 5] points.

A pilot study was first undertaken, in which these numerical scales were administered to 48 teacher participants and their responses were analyzed. The Construct validity of the rating scales were determined through item-whole correlation method. The scores of individual statements were compared with the overall score and correlation coefficient between the two (part versus whole) were obtained. Only those statements which showed medium to high positive correlation with the whole ($r > 0.3$) were retained. The final sets had altogether 85 statements related to Teacher Motivation and 56 statements related to effectiveness of curriculum.

The reliability of the numerical scales was measured using split half method. The statements comprising these scales were split into two equal parts. The responses for odd numbered statements were compared with the responses for even numbered statements. The SpearmanBrown formula was applied to ascertain the reliability of the whole numerical scale. We obtained a correlation (r) of 0.94 in case of Teacher Motivation and 0.98 in case of effectiveness of curriculum, thus showing a very high reliability.

For assessment of Student achievement the summative assessment scores in the report cards of the students were used.

Findings

The two rating scales that were constructed for the present study were given to the primary section teachers of the above seven schools. The responses of the teachers were analyzed. The result of this analysis is summarized in the tables 1 and 2 below.

In order to decide whether the mean scores for the different cases of background variables were distinct or not a t test for two independent means was conducted on the sets of scores. Table 1 given below contains the summary scores for effectiveness of Elementary education curriculum with respect to different background variables. It was observed that the effectiveness of curriculum was not affected by any of the chosen background variables.

Table 1: Effectiveness of curriculum with respect to Background variables

X	N(x)	Mean(x)	SD(x)	Y	N(y)	Mean(y)	SD(y)	t	p value	significant
Male teachers	101	228.78	24.94	Female teachers	97	230.18	24.68	0.39	0.69	No
Govt school teachers	62	229.5	25.09	Private school teachers	136	229.45	24.71	0.01	0.99	No
Teaching experience < 5 yr	41	225.9	24.7	Teaching experience > 5 yr	157	230.4	24.8	-1.04	0.3	No
Age < 35 yr	54	228.5	21.29	Age > 35 yr	144	229.8	26.01	0.33	0.74	No

Graduate Teachers	53	227.3	25.6	Post Graduate Teachers	145	230.3	24.5	0.75	0.45	No
Trained Teachers	165	230	24.63	Untrained Teachers	33	226.8	25.66	0.67	0.5	No
Unmarried Teachers	22	235.9	18.79	Married Teachers	176	228.6	25.31	-1.31	0.1	No

A similar t test was carried out for the mean scores for the different cases of background variables for Teacher motivation. The results are summarized in Table 2 given below. It was observed that teacher motivation was not affected significantly by any of the chosen background variables except the school management. The average level of motivation of teachers from privately managed schools was higher compared to the average motivation level of teachers of government schools.

Table 2: Teacher Motivation with respect to Background variables

X	N(x)	Mean(x)	SD(x)	Y	N(y)	Mean(y)	SD(y)	t	p value	significant
Male teachers	101	361.24	33.01	Female teachers	97	366.06	24.82	-1.16	0.25	No
Govt school teachers	62	357.6	29.67	Private school teachers	136	366.36	28.83	-1.98	0.05	Yes
Teaching experience < 5 yr	41	364.39	34.05	Teaching experience > 5 yr	157	363.39	28.06	0.19	0.85	No
Age < 35 yr	54	363.63	30.05	Age > 35 yr	144	363.59	29.14	0.01	0.99	No
Graduate Teachers	53	365.75	31.39	Post Graduate Teachers	145	362.81	28.59	0.62	0.53	No
Trained Teachers	165	363.61	27.57	Untrained Teachers	33	363.55	37.33	0.01	0.99	No
Unmarried Teachers	22	371.18	19.51	Married Teachers	176	362.65	30.22	-1.29	0.2	No

For assessing Student Achievement the summative assessment grades of the students were converted into a 1-5 numerical scale (5 for A⁺, 4 for A, 3 for B, 2 for C and 1 for D). This data was tabulated for different cases of the background variables and their means and standard deviations were calculated. A one way ANOVA (F test) was administered in order to find whether the means in different instances could be considered as distinct. The results are summarized in table 3 below. The differences in average Student achievement scores between different instances of the background variables were not significant in the cases of gender and class in which the students studied. But significant differences

were found between the categories in the following cases. Students of private schools had higher average student achievement level. Students belonging to rich and middle classes performed better. Also, students with better parental education performed better.

Table 3: Student Achievement with respect to Background variables

Category	Type	Number	Mean	SD	F	p	Whether significant
Gender	Male	589	3.63	0.85	0.44	0.5	No
	Female	387	3.67	0.9	0.44	0.5	
School Management	Government	440	3.54	0.85	11.99	<0.01	Yes
	Private	536	3.73	0.88	11.99		
Financial Status	Poor class	177	3.31	0.84	20.08	<0.01	Yes
	Middle class	626	3.69	0.86	20.08		
	Rich class	173	3.86	0.83	20.08		
Parent's Education	Below Matric	59	3.24	0.84	8.52	<0.01	Yes
	Between Matric & Graduation	663	3.65	0.89	8.52		
	Above Graduation	254	3.74	0.81	8.52		
Studying in class	Class 3	321	3.66	0.86	0.1	0.9	No
	Class 4	324	3.63	0.85	0.1	0.9	
	Class 5	331	3.65	0.9	0.1	0.9	

Wherever there are more than two categories and F test shows that at least one of the means is significantly different, this test alone is not sufficient to discriminate which of the means is significantly different from the others. To do so, further calculation of t statistic was done between pairs of the categories. This was necessary in the cases of Parents' financial Status and Parent's Education. With respect to Parents' financial Status, the mean scores for student achievement are distinctly different between rich class, middle class and poor class. In the case of Parental education, the mean scores for student achievement of students whose parents had education below matriculation are distinctly lower compared to the others. The difference in the average scores between the students whose parents had education beyond matriculation was not significant. Table 4 given below summarizes these results.

Table 4: t-test results for distinguishing between student achievement levels in case of Parents' financial status and Parental Education

Variable A	Variable B	t	p	Whether significant
Parents' financial status				
Students from poor class	Students from middle class	-3.41	Less than 0.01	Yes
Students from middle class	Students from rich class	-2.79	0.02	Yes
Parental Education				
Below Matric	Between Mat.&Graduate	-3.41	Less than 0.01	Yes
Between Mat.&Graduate	Above Graduation	-1.55	0.11	No

To test whether there is any significant relationship between effectiveness of elementary education curriculum and teacher motivation the correlation coefficient between the two scores was obtained. Table 5 given below summarizes the result. A correlation of 0.53 was obtained which is considered very good because the corresponding p-value is much less than 0.01.

Table 5: Correlation between major parameters

	Number of teachers	Mean score	Standard Deviation	Correlation coefficient <i>r</i>	P value
Teacher Motivation score	198	363.6	29.31	0.53	Less than 0.01
Effectiveness of Curriculum score	198	229.46	24.76		

The relation between student achievement and effectiveness of Elementary Education curriculum was also studied. The correlation technique requires paired data. In order to achieve this pairing, school-wise bunching of teacher motivation and student achievement were carried out before calculating *r*. This method has earlier been used in large scale survey of student achievement by US Government (Coleman et al. 1966). This way, an attempt was made to investigate whether any relation exists between school averages of these parameters. Data collected from seven schools are given in the table 6 given below.

Table 6: Schoolwise data for Effectiveness of Curriculum and Student Achievement

School	Effectiveness of Curriculum			Student Achievement		
	Num	Mean	Var.	Num	Mean	Var.

KVK	22	223.82	537.3	143	3.48	0.62
KVD	20	233.25	441.67	143	3.48	0.62
KVBR	20	232	926.11	151	3.66	0.91
KSVM	48	226.44	693.02	133	3.53	0.83
DPS	30	227.3	813.94	120	3.83	0.8
LVS	28	232.36	448.31	133	3.61	0.82
MICH	30	233.7	440.56	150	3.95	0.55

The Correlation Coefficient between the Effectiveness of curriculum scores and Student Achievement scores was calculated for this data. The researchers obtained $r=0.11$. The degree of freedom $df=5$. The corresponding value of p is 0.81 which is not significant ($\alpha=0.05$). Thus the correlation is positive but weak.

Discussions and Conclusion

The following significant findings were obtained.

- Teacher motivation has been found in the present study to be positively correlated with teacher's perception of effectiveness of curriculum. Thus an effective curriculum has a positive influence on the motivation of the teacher.
- Teacher's perception about the effectiveness of curriculum was examined with respect to different Background variables. It was found that the Background variables did not affect teacher's perception about the effectiveness of curriculum.
- Teacher motivation was examined for different Background variables. There was no significant effect of different background variables on Teacher motivation except in one case: The Motivation of teachers from Private schools were found to be higher than that of teachers from government schools.
- There were clear cut variations in the Student Achievement data with respect to the Background variables. The Student Achievement in private schools was significantly higher than in the government schools.
- There was also a significant correlation of academic performance with the family financial status. The academic performance of students from rich class was significantly better compared to that of students from middle class and the academic performance of the students belonging to poor class was significantly lower.
- Poor parental education also appeared to negatively affect the student's achievement. The achievement levels of students whose parents had education below matric level (Present class Tenth) was significantly lower compared to students whose parents had better education.

- A school wise comparison between effectiveness of Curriculum and Student achievement did not give any significant correlation in any case. Effectiveness of curriculum might be having a small positive influence on Student achievement.

The researchers found Teacher motivation to be positively correlated with Effectiveness of curriculum. This is to be expected. According to Eggleton (1992), there are several factors that motivate students to be better achievers, and one of them is the teacher's motivation. Orji Friday Oku (2014) carried out a study of the impact of Teacher Motivation on Academic Performance of students. He observed that teacher motivation provides the desire in students to learn and they get involved in the learning process thus acquiring ideas, skills and concepts for total development. Richardson (2011) studied the effects of Teacher efficacy on the academic achievement of African American students. He found that teacher motivation was not sufficient for good student performance. Cultural factors are also important. McKinney (2000) carried out a study to assess the relationships among student achievement, teacher motivation and incentive pay. However, she did not find any significant correlation.

When the Effectiveness of curriculum was examined with respect to different background variables, i.e. Gender, Age, Teaching experience, Academic and professional qualification, and marital status, it was found that the differences were not significant. Teacher motivation was examined for different Background variables. There was no significant effect of different background variables on Teacher motivation except in one case: The Motivation of teachers from Private schools were found to be higher than that of teachers from government schools. A similar result had been obtained by Aslam in a study conducted in Pakistan (2013).

There were clear cut variations with the Background variables in the Student Achievement data. The Student Achievement in private schools was significantly higher in the present study than in the government schools. Private schools showed better scores for student achievement in other studies too. Rob French & Geeta Kingdon (2010) had observed a similar pattern in rural India schools. Singh (2014) in Manipur, observed that private schools gave better results than government schools. There was also a significant difference in academic performance with respect to the family financial status. The academic performance of students from rich class was significantly better compared to that of students from middle class and the academic performance of the students belonging to poor class was significantly lower. This result is in line with Considine and Zappala (2002) who observed that the education of students from disadvantaged backgrounds suffers. Muthoni (2013) in a study found that financial status had a positive correlation with academic performance. Muthoni also obtained a small effect of parental education on academic performance. In the present study also, it was observed that Poor parental education negatively affected the student's achievement. The achievement levels of students whose parents had education below matric level (Present class Tenth) was significantly lower compared to students whose parents had better education. The researcher carried out a school wise comparison between Effectiveness of Curriculum and Student achievement. It gave a positive correlation in all cases but the values were not significant. Effectiveness of curriculum might be having a small positive influence on Student achievement. But this cannot be said with confidence from the present data. The small value for correlation might arise from several possible causes, the most probable out of them being sample size limitation. The present study was restricted to seven schools only because of various constraints. A larger sample size might possibly give a clearer picture. Luciano (2014) who studied the Influence of Curriculum Quality on Student Achievement found that although the curriculum quality does affect student achievement, the picture is not simple and further study might be required by including other variables.

Recommendations

This study and the various discussions of the authors with teachers, students and school authorities has brought about the following points. Firstly, the motivation of teachers is important and the school authorities should pay more attention to keeping the teachers and students motivated for good performance. Secondly, it is important to maintain a high morale of teachers and students. The overall atmosphere of the school in terms of it matters how the curriculum is implemented. A balance is required in the implementation.

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