



Correlates and Determinants of Learning Achievement of Students: A Study of Uttarakhand State

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Abstract

The paper argues that besides improving Pupil Teachers Ratio (PTR) and competencies of teachers in mathematics and their pedagogy skill, there is a greater need to focus on attitudinal and motivation development of teachers, specifically keeping the socio-economic base of government elementary schools, as majority of the students in these schools are from socio-economically vulnerable section who rarely get proper academic and motivational support outside the schooling system.

Introduction

For long education has been identified with progress and prosperity of a society. In fact, the spread of education is treated as an effective solution to the problems of economic decline, hunger, human poverty and elimination of unfreedom (Drèze, and Sen,1996). It has been conclusively establish that education, especially elementary education, is crucial in the process of capability creation, developing responsive citizenry and fostering growth. Therefore, elementary education, in contemporary discourses, is viewed as important and unique human right, for its intrinsic value and its qualities to develop reinforcing relationship between various human rights and enabling people to raise voice to resists all forms of exploitation. Elementary education the great enabling factor to make use of opportunities economic or others, is a key component to human development (UNDP 1997). It is a fact that India has made substantial progress in elementary schooling especially in terms of expansion of schools and enrollment of children. However the efficiency of government schooling system inter alia measured, in terms of learning out comes (the marks scored by children) is matter of serious concern (De Anuradha at el 2011). The findings of the achievement level studies conducted by National Council of Educational Research and Training (NCERT) also reveals that the quality of learning in government schools is quite low and the matter of grave concern is with increase in standard achievement level of students tends to decline (Juyal at. el. 2013). Commenting on quality of education in India, experts of world bank has noted that children who reach the final years of lower primary (grade 4 and some states grade 5 in others) often have mastered less than half the curriculum. Studies across the world show that parent's investing in their children's education may be the most effective way to boost the learning achievement. But poverty limits the ability Indian parents to make the necessary investment (World Bank, 1997).

Educational Profile of Uttarakhand:

Uttarakhand, located in the north western part of Indian Himalaya spread over an 53483 square kilometers, of which about 46035 square kilometers (86 percent of the total areas) is hilly and mountainous and about 7448 square kilometers (14 percent) are of plain topography. As per census 2011, state accommodates about 1.01 crore people and about seventy percent population of the state is rural, scattered in small mountainous villages and about 49.5 percent villages of the state are of a population size of up to 200 persons. Uttarakhand has sex ratio, 963 female to per thousand male. In literacy Uttarakhand has made tremendous progress to the extent that eight districts of the state has literacy rate more than eighty percent. Except in Haridwar and US Nagar, male literacy is either very close to ninety percent or more than ninety percent. This is largely because the state has taken big stride in universalization of elementary education. There are 15642 primary 4285 upper primary schools in the states. In the year 2013-14 about 97.34 percent habitations had primary school or Education Guarantee Schools either in the habitation or within less than half kilometer. In the same year about 98.2 percent habitations of the state had upper primary schools within less than three kilometers. This expansion of schooling facility has facilitated enrollment to the extent that the state is at the threshold of achieving Universal Elementary Education (UEE) as far as access and enrolment is concerned, as about 99.57 percent children in the age group of 6-11 year and 99.47 percent in the 11-14 years are enrolled in schools. However the quality of education is still a matter of great concern. As far as the quality and learning level of the students is concern, results of the present research study not speak well about the massive investment being incurred on elementary education, and as well to the objective of Universalization of Elementary Education.

Methodology:

The basic objective of the present study is to identify the factors of educational environment effect the learning achievement of the students. For this purpose two districts of the Uttarakhand state namely district Dehradun and district Pauri Garhwal have been selected. Selecting 15 schools in each district, a total of 30 schools were selected. The selection of school within block was done randomly. With the selection of school the service area of the school habitation, village, Basti or ward was automatically selected. Student, teacher and parents were also added in sampling. Students completing class I, and class IV were selected for achievement tests in language and mathematics. On the basis of the 10 students studying in class I and IV around 300 student in lass I and 300 student of class IV were selected to achievement tests designed for class I and IV respectively. It is important to mention that in the sample size of student will be selected among different social category like schedule cast, schedule tribes and other backward classes to draw a comparative analysis. Girls student is given due consideration for the gender related schooling issues. Maximum two teachers, from a school were selected for the study. Therefore around 60 teachers have been selected from 30 sample schools. From the sample of student selected from class -IV parents of all students were selected for study. Therefore around 300 parents were included in the sample. Learning achievement tools for class-I and class IV in mathematics and language were used. These schedules have been designed by NCERT and used by various research institutions to evaluate the level of learning of students. These tools are specific questions given to evaluate the level of learning and the students are expected to complete this test within the specific time period¹. A specific computer programme is used to analyze the result and on the basis of the results interpretation has been made about the achievement level of the respondents. The schedules were also prepared for collection data about the school, student and the teachers associated with the school.

Results and Discussion

1. Achievement Level of Students of class I in Hindi Language

On average students, completed class I in the district scored 77 percent marks in Hindi Language. Boys scored (about 77.8n percent) better than girls (about 76.15 percent). Urban students scored (81.45 percent) better compared to rural students (about 75.6 percent). Nevertheless, the differences in the level of achievement rural and urban student, and also boys and girls are not statistically significant. The mean achievement level of students of different social groups reveals that in language other caste boys have scored highest among all students and the score of scheduled caste students is lowest. The inter caste differences in the level of achievement of students, is not significant statistically, as revealed by the Duncan's mean test.

Table -1 Achievement Level of students of Class I in Language

Details	Mean	SD	Percent Mean	Difference
Total (N=259)	15.40	4.27	77.0	
Boys (N=131)	15.56	4.19	77.8	Statistically insignificant (t value 0.66)
Girls (N=128)	15.23	4.36	76.15	
Rural (N=197)	15.12	4.46	75.6	Statistically insignificant (t value 1.90)
Urban (N=62)	16.29	3.45	81.45	
Scheduled caste (N=71)	14.96	4.46	74.8	Using Duncan's mean test, no statistically significant difference has been observed between the achievement levels of any two communities.
Scheduled tribe (N=44)	15.02	4.40	75.1	
Other Backward caste (N=22)	15.02	4.39	75.1	
Other caste (N=122)	15.85	4.09	79.25	

2. Achievement Level of Students of class I in Mathematics

The average score of students completed class I in mathematics is about 76.10 percent Boys have scored (78.0 percent) better than girls, (74.15 per cent). However, no statistically significant difference is observed between the achievement levels of boys and girls. On an average urban students have scored better (80.0 percent) compared, rural students (about 74.85 percent). The difference in the achievement level of rural and urban students has also not been found statistically significant.

Table- 2 Achievement Level of students Passed Class I in Mathematics

Details	Mean	Standard Deviation	Percent Mean	Statistical Inference
Total (N=259)	15.22	4.31	76.1	
Boys (N=131)	15.60	4.19	78.0	insignificant (t value 1.45)
Girls (N=128)	14.83	4.22	74.15	
Rural (N=197)	14.97	4.32	74.85	insignificant (t value 1.60)
Urban (N=62)	16	4.24	80.0	
Scheduled caste (N=71)	14.66	4.40	73.3	Applying Duncan's mean test, no statistically significant difference has been observed between the achievement levels of any two communities.
Scheduled tribe (N=44)	15.03	4.85	75.15	
Other Backward caste (N=22)	15.15	4.24	75.75	
Other caste (N=122)	15.42	4.14	77.1	

It is pertinent to mention that no significant difference has been observed between the achievement level of boys and girls, rural and urban students and students of different castes. However, from above data it is clear that order of merit is in accordance with the typical traditional hierarchical pattern. For instance boys are scoring better than girls, urban students scoring better than rural students and other caste students scoring better than other backward caste, scheduled caste and scheduled tribe students. In this scheme of things scheduled caste students are at lowest rank of merit. These streaks of inequalities though appear feeble but their presence at the entry level of elementary education is a matter of serious concern. As in the society divided in class and caste, these inequalities are bound to accentuate with increase in standard.

3. Achievement Level of class IV Student in Language

Similarly two standardized tests, one of language (Hindi) and other of mathematics were administered to sample students of class IV standard and studying class-V. The language test administered consists of two parts. First part relates to word-meaning section, and students were to identify synonyms and antonyms. And the second section relates to reading comprehension. The average score of students in language has been found 47.67 percent. The disaggregated data of achievement level of students across gender, caste and areas wise are in the table 3. A perusal of the table reveals that boys and girls have scored almost identical marks hence the difference in the level of achievement is not statistically significant. The average score of urban students is much higher than rural students and the difference is also statistically significant. In the order of merit other caste students scored highest, followed by the marks achieved by scheduled caste, scheduled tribe students and the other backward caste students are at the lowest level of merit. However, the difference in the achievement level of students of other caste and other backward, as indicated by Duncan's mean test is statistically significant.

Table 3 Achievement Level of students of Class IV in Hindi Language

Details	Mean	Standard Deviation	Percent Mean	Statistical Difference
Total (N= 239)	33.37	11.07	47.67	Statistically insignificant, t value 0.03
Boys (N=105)	33.34	12.83	47.63	
Girls (N=134)	33.39	10.88	47.70	
Rural (N=187)	31.39	10.80	44.84	Statistically significant, t value 5.19, at 0.05 level of significance
Urban (N=52)	40.48	12.37	57.83	
Scheduled caste (N=61)	33.95	13.21	48.50	Applying Duncan's mean test, statistically significant difference has been observed between the achievement level of other caste and other backward caste at 0.05 levels. In other combination of social groups no statistically significant has been observed
Scheduled tribe (N=39)	33.89	8.9	48.41	
Other Backward caste (N=35)	29.45	8.9	42.07	
Other caste (N=104)	34.14	11.32	48.77	

4 Achievement Level of Class IV Students in Mathematics

Performance of students in mathematics is much lower than language. The average score of students in Mathematics has been found 33.46 percent. The disaggregated data of achievement level of students across gender, castes and areas have are table 4. Although boys have scored better compared to girls but the difference between the achievement level of boys and girls is not statistically significant. A perusal of the table reveals that rural students have scored better than urban students, but the difference in the achievement level rural and urban students is not statistically significant. Caste wise analysis of achievement of students revealed that scheduled tribe students obtained highest marks followed by the score of other castes and other backward caste students and the lowest score is of the students of scheduled castes. Duncan's mean test revealed that the inter caste differences in the achievement level of students in any castes has not been found statistically significant.

Table 4
Achievement Level of students of Class IV in Mathematics

Details	Mean	Standard Deviation	Percent Mean	Statistical Difference
Total (N= 239)	13.38	5.64	33.46	Statistically insignificant, t value 0.53
Boys (N=105)	12	6.67	34.05	
Girls (N=134)	13.20	5.69	33.0	
Rural (N=187)	13.55	6.42	33.88	Statistically insignificant, t value 0.77
Urban (N=52)	12.81	4.86	32.02	Applying Duncan's mean test, no statistically significant difference has been observed between the achievement level of any two communities.
Scheduled caste (N=61)	12.37	5.44	30.93	
Scheduled tribe (N=39)	14.95	4.95	37.38	
Other Backward caste (N=35)	12.94	6.85	32.35	
Other caste (N=104)	13.51	6.55	33.78	

In the following paragraphs attempt has been made to comprehend factors influencing the achievement level of students. The first attempt in this regard has been made to analyze the relationship of rural female literacy, which is considered an important indicator of social development with achievement level of students. The development blocks of the district has been categorized into three categories, in accordance with the female literacy as per census of 2001 viz. block with female literacy less than 45 percent, above 45 but less than 65 percent and about 65 percent, blocks with female literacy between to percent and blocks with female literacy above percent. By using Duncan's Mean Test it was tried to ascertain that whether there is significant difference in the level of learning of students these blocks categorized on the basis of rate of female literacy.

Correlates of Learning Achievement

To frame an appropriate policy to improve quality of learning, comprehension of the nature and magnitude of factors affecting the level of learning is a prerequisite. In present context, the dependent variable is the level of learning as its level depends on various factors (variables). As mentioned in methods and processes, that along with achievement test, a questionnaire enlisting various queries, which supposed to influence level of learning, was administered to each and every student completed class IV (studying in class V). Besides, the usual information about gender, caste and area of residence – rural or urban, every student was requested to share his/her perception about the classroom process and environment like, comprehension of classroom teaching, classroom environment- like student teacher interaction, teacher, students sharing jokes, telling stories, reciting poems etc. in the classroom. Information was also solicited on assignment, completion and correction of home work, academic help available at home; regularity in attending school, participation in games etc. Likewise information about student's engagement in livelihood activities and ambition to study further has also been solicited. Most of the variable selected also have decisive influence on school effectiveness and are in the domain of school governance and educational planning. It is underlined here that these factors portray only partial picture but they are being highlighted as their effectiveness could be improved by sustained interventions. Moreover whatever the quality of curriculum, textbooks and teachers, these factors, as we will see have universal applicability. The list of these variables which have correlation with level of learning in language and mathematics, along with the correlation coefficient is given in the table-5.

Table -5

Relationship of Independent Variables with achievement in Language and Mathematics (correlation Coefficient)

Sl. No.	Independent variables	Achievement scores	
		Language	Mathematics
1	Sex (1=Boy, 0=Girl)	-.01	.00
2	Age	.07	.10
4	Assistance available to complete homework	.05	-.03
5	Student taking tuition	.00	.05
6	Teacher showing evaluated answer sheet to students	-.11	.17**
7	Comprehension of class room teaching	.05	.20**
8	Teacher asking question after completing the lesson	.00	.03
9	Teacher correcting homework	.03	.30**
10	Physical Punishment	-.01	.08
11	Dictation given by teachers	.11	.09
12	Teacher telling stories, reciting poems and sharing jokes with the students in the class	.14*	.13*
13	Students reciting poems, telling stories and sharing jokes in class room	.03	.01
14	Teacher asking students about their personal problems	-.11	.01
15	Teacher telling new things in the course	.03	.01
16	Physical exercise	.08	.05
17	Organizing cultural events	-.20**	-.08
18	Distance of school from home	.14*	.03

* Significant at 0.05 level, ** significant at .10 level.

Out of the total 18 variable having correlation with level of achievement in Hindi language, two variables have positive correlation at 0.5 level of significance. The significant and positive correlation of teacher sharing jokes, telling stories and reciting poems in classroom, indicates towards the positive and strong influence of joyful learning environment on level of learning of students. To create non-threatening environment, is the primary responsibility of teacher. This largely depends up attitudes of teachers which in an integrate part of teachers training. The positive and significant correlation between distances of school from place of residence of students seems a bit unusual. But this might have emerged because students who have to cover relatively more distance to reach school probably do not engage themselves in other activities, because constraint of time, hence they may be more attentive towards studies at home and in class room. Generally, it is believed that organizing cultural meets, improves communication skill and enthuse creativity among students. But in present study, negative correlations have been found between students' achievement in language and school organizing cultural events, at significance level of .01. This is largely because, during field investigation it has been observed that teachers are very selective in approach to provide opportunities to students to participate in cultural activities. The students who have better in theatrics and other activities are given repeated chances and large number of students do not participate. Like wise is the situation about games and sports. This approach of teachers not only defeats the objective of the co-cognitive activities but becomes counter productive. The other variables, which have positive correlation with achievement in language, although not statistically significant, are usual. These variables tell about the conducive, encouraging and non-threatening learning environment prevailing in the family, sroom and school. For instance, assistance available complete homework is positively correlated with achievement level. This indicates that parents or elders in the family are educated, aware of importance of education and do take care that student completes his homework. Likewise comprehension of class room teaching, teachers correcting homework, dictation given by teachers, student reciting poems, sharing jokes and telling stories in class room, teachers discussing new things besides prescribed in syllabus and students liking for schools, all these variables have positive correlation with achievement level. The other factors negatively correlated with level of achievement in language, but not significant statistically, are continuous absence of student from school for more than one month, physical punishment and teacher inquiring about the personal problems of students. The negative relationship of absence from school and physical punishment with achievement level is usual and well established. Nevertheless, the negative correlation between teachers inquiring about personal problems of students and achievement level is a bit strange. However, it seems that after inquiring the problem the

teacher may not be position to help the student or simply do not take the problem seriously or may not have the skill, to handle the emotional stress of the children. In extreme cases teacher may have contemptuous attitude to the problems articulated by students.

Correlates of Achievement Level of Mathematics

The variables correlated with achievement level in mathematics and are statistically significant at 0.05 levels and 0.01 level are five in number. In addition to it, fourteen variables also have correlation with level of achievement in mathematics but are not statistically significant. Variables that are positively correlated and significant at .01 level and 0.05 level are teacher correcting home work, Comprehension of class room teaching, Teacher showing evaluated answers sheets to student, Teachers telling stories, reciting poems and sharing jokes in class. It is a common observation while correcting homework the shortcomings of individual student comes in to focus and teachers provide specific guidance as per the need of the student. This fact has been further substantiated, by the high significance of variable teacher showing evaluated answer sheets to students. The significant and positive correlation of these two variables with achievement level underlines the need of personal attention to students. Obviously improvement in pupil-teacher ratio (PTR) is pre-requisite to enable teachers, to pay individual attention to students. The significant correlation, between the comprehension of class room teaching, in the backdrop of low level of achievement of students in mathematics indicates that majority of students do not comprehend class room teaching. This finding suggests that class room processes need to be improved substantially and for this inter-alia like improving PTR, more emphasis should be given on teaching skill of mathematics in the in-service programme of teachers. It is an established fact that the phobia of difficulties in mathematics is the stumbling block in learning process of the subject. The significant positive correlation that exists between the variables teachers telling stories, reciting poems and sharing jokes in class and achievement level of students, suggests that by creating joyful learning environment, teachers can substantially improve the effectiveness of teaching, and help to remove the fear associated with Mathematics. The negative correlation between achievement level in mathematics and assistance received in completing homework also appear queer. However, as the social economic context of elementary education suggest, this relation may exist because the help available at home may not be quality one for the reason of low level of education of parents especially of mothers. She may simply insist to the children to complete their homework in mechanical manner without enhancing the capability to comprehend the subject. This very fact suggest that the over emphasis homework is counter productive in learning and underline the need of improving the quality of class room processes:

Conclusion

The aforesaid discussion on the achievement level can be concluded with the observations that student regularly completing homework, teacher correcting homework regularly, teacher creating inquisitiveness in students in a joyful learning environment are the determinating factors of achievement level. These findings urge educational planner and pedagogy experts to improve pupil teacher ratio further and focus on improvement of quality of teachers. In this simply increasing number of teachers is necessary but not sufficient to bring the desired result. The attitude of teachers and their skill especially of teaching mathematics are more important. These aspects need to be emphasized in the pre-service trainings and in-service training of teachers.. The study establishes the necessity of creating joyful learning environment in the classroom and school, and in this endeavour the well established beneficial impact of co-cognitive activities need to be utilized specially breaking the ice between teachers and students and the peer group. However, the content and schedule of these activities should be evaluated and their thrust needs to be shifted from creating excellence to universal participation of student.

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