

How Much They Know?: Assessment of the Numeracy skills at Primary Stage in Haryana (India)

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ABSTRACT

The present research study was carried out to assess the learning achievement levels of primary school students of Haryana (India). To assess learning achievement of primary school students, a competency based achievement test in mathematics developed by NCERT was adapted by the investigator. To elicit information on demographic variables, Student Personal data sheet was also constructed by the investigator. Percentage analysis, descriptive statistics, t-test were employed for carrying out the analysis of data. Results obtained from analysis illustrated that the learning achievement of primary school students in mathematics (41.23%) was of low level. Since, the effects of primary education on national development are largely a result of the cognitive skills it imparts: literacy (reading & writing), numerical and problem-solving skills, it was recommended that concerted efforts need to be taken to improve the quality of education with a focus on universal achievement.

Keywords: Learning Achievement, Numeracy skills, demographic Variables.

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Introduction

At present, in India, the educational problem which is exercising the mind of governments and masses is that the rapid expansion of elementary education in the wake of EFA seems to have overshadowed the quality of education. Along with all other factors which determine the quality of education, the most vital one that attracts the attention of one and all is the level of attainment. Though universalization of elementary education (UEE) has remained a priority with the Govt. of India and claimed to ensure near UEE in UNESCO's (2015) Global Monitoring Report, but it lagged behind in the area of providing satisfactory learning outcomes. Since the implementation of RTE, 2009 there is considerable improvement in retention of child for early years of elementary schooling and no student is being declared 'failed' in school records due to zero detention policy in elementary classes; it has been reported that students are to drop out from school because of inability to read, write and understand the increasing difficult content matter in the ladder of elementary levels and thus reflecting on quality of school learning (Kushwaha & Srivastava, 2011; Kushwaha, 2012). The Continuous and Comprehensive evaluation did not make place in teaching learning process to gauge the level of learner's deficit in learning and teachers followed CCE without innovation and originality (Berry, Kannan, Mukherji, & Shotland, 2019).

Literature Review

Several reports and achievement surveys conducted by government and non-government agencies notes that there is a national crisis in learning outcomes. The findings of the National Achievement surveys by NCERT, ASER reports of various years and other research studies also provide a database on unsatisfactory achievement levels at the primary stage in India and specifically in Haryana (Kumar, Agarwal & Sharma, 2013; NCERT, 2014; SCERT, 2018; ASER Centre, 2020). The learning achievement levels of primary school students at national and state level in most of the cases, across primary classes and subjects are not at grade appropriate level. This was reflected in the percentage of students who attained mastery levels as the learning achievement scores of students at the terminal stage of primary schooling ranged from 25% to 60%. Educational Initiative (2015) found that the average performance of class V students of Haryana ranges 34% to 44% in mathematics. NCERT (2017) also revealed that class V students

of Haryana responded with 46% correct responses for the subjects, mathematics. Most of the studies have consistently exhibited poor performance of learners in mathematics (Aggarwal, 2000; SCERT, 2017).

Demographic variables such as gender, location, social-group, pre-primary education have relationship with learning achievement. Research studies have come up with diverse set of findings on gender variations in achievement scores. Most of them have found gender variations in achievement scores to be less significant on the whole, though many studies exhibit the trend of better performance of boys over girls in the subject area of mathematics. Several studies have found consistently that children from scheduled castes/and scheduled tribes are the poorest achievers (Kaur, 2010; NCERT, 2014).

All macro-level databases only provide a picture of the overall status of the schools in different states and the country. Studies are hardly found at micro-level which throw much light on the learning achievement levels of primary school students of Haryana. Thus, it is in the backdrop of getting a holistic understanding of the levels of learning achievement of primary school students of Haryana, it was considered worthwhile to undertake this research problem.

Objectives of study

To investigate the research problem following objectives were formulated;

1. To assess the learning achievement levels of primary school students of Haryana in mathematics.
2. To study learning achievement of primary school students of Haryana in mathematics in terms of demographic variables.

Hypothesis

The government primary school students will exhibit significant difference in their mean learning achievement in mathematics in terms of demographic variables i.e. (i) gender, (ii) location, (iv) social-group, and (v) pre-primary education.

Methodology and Procedures

Keeping in view of the explorative nature, main purpose and objectives of the present study, the “Descriptive method of research” was employed for conducting the study. To assess learning achievement of primary school students, an achievement test in mathematics developed by NCERT was adapted by the investigator. To elicit information on demographic variables, Student Personal Data Sheet was also constructed by the investigator.

All class V primary school students of Haryana who were studying in either independent or attached to government middle/high/senior secondary schools of the state were constituted the population of the study. Multistage stratified random sampling technique was employed for the selection of various constituents of the present study. For selection of districts, at first, all the twenty two districts of Haryana were divided into two strata namely DPEP districts and Non-DPEP districts on the basis whether the district was covered under the purview of DPEP or not. From the first stratum i.e. out of the ten DPEP districts, three districts namely Jind, Fatehabad and Bhiwani and from the second stratum i.e. out of the twelve Non-DPEP districts, three districts namely Panchkula, Karnal and Rohtak were selected randomly by a draw of lots. In all the sampled districts, there were 39 blocks which consist of a total of 35 educational blocks. There were 4 educational blocks in district Panchkula, 5 educational blocks in Rohtak, 6 educational blocks each in districts Karnal and Fatehabad and 7 educational blocks each in district Jind and Bhiwani. For selecting the educational blocks, two separate lists were prepared in which, all educational blocks of sampled DPEP districts and Non-DPEP districts were listed alphabetically. A total of 20 blocks, 10 each from DPEP districts and Non-DPEP districts were selected randomly. After the selection of districts and educational blocks, all government primary schools of Haryana including primary sections (I-V) either independent or attached to government middle/ high/ senior secondary schools were listed. From the selected educational blocks, keeping in consideration the location of schools, a total of 36 schools were selected randomly i.e. 6 schools (3 each from urban area and rural area) from each district were selected. When only one section of class V was available in the sampled schools, all the students of class V were selected for collection of data whereas in case of availability of more than one section,

the selection of one section was done randomly and all the students from the selected section constituted the sample. The sample of the present study consists of 905 students of class V from the 36 sampled government primary schools of six district of Haryana.

After finalising the research tools and selection of schools the researcher visited the schools and collected the data. The Student Personal Data Sheet was administered on students to get the requisite information. After establishing a proper rapport with the class V students and making them aware about the purpose of the study, mathematics achievement test was administered on them for assessing their learning achievement in mathematics.

Data Analysis and Interpretation

1. Descriptive statistics namely, frequency distribution, central tendency and variability were used to explain the learning achievement level of government primary school students in mathematics.
2. The use of 't-test' was made to test the significance of mean differences in learning achievement of government primary school students in mathematics in terms of demographic variables.

1.1 LEARNING ACHIEVEMENT IN MATHEMATICS

The frequency distribution of government primary school students on the basis of their learning achievement in mathematics along with descriptive statistics is given in Table 1.1.

Table 1.1

Distribution of Government Primary School Students on the basis of their Learning Achievement in Mathematics (N= 905)

Class - Interval	Frequency	Percentage	C.P.F.
70-79	4	0.44	100.00
60-69	23	2.54	99.56
50-59	66	7.29	97.02
40-49	131	14.48	89.72
30-39	337	37.24	75.25

20-29	219	24.20	38.01
10-19	108	11.93	13.81
0-9	17	1.88	1.88
Total (N)	905	100.00	
Mean	Median	Mode	SD
32.98	32.72	32.2	12.65
Skewness	Kurtosis	Range	
0.062	0.228	72 (0-72)	

It may be observed from Table 1.1 that the mean performance of government primary school students in mathematics came out to be 32.98 on a scale of 0-80 with the standard deviation being 12.65. The median and mode values came out to be 32.72 and 32.2 respectively. It may also be observed that 38.01% of students have their score up to score point of 29 as compared to 37.24% of students lying between 30-39, 14.48% of students between 40-49 and only 10.28% of students scoring 50 or above. Figure 1.1 shows the distribution of government primary school students on the basis of their learning achievement in mathematics.

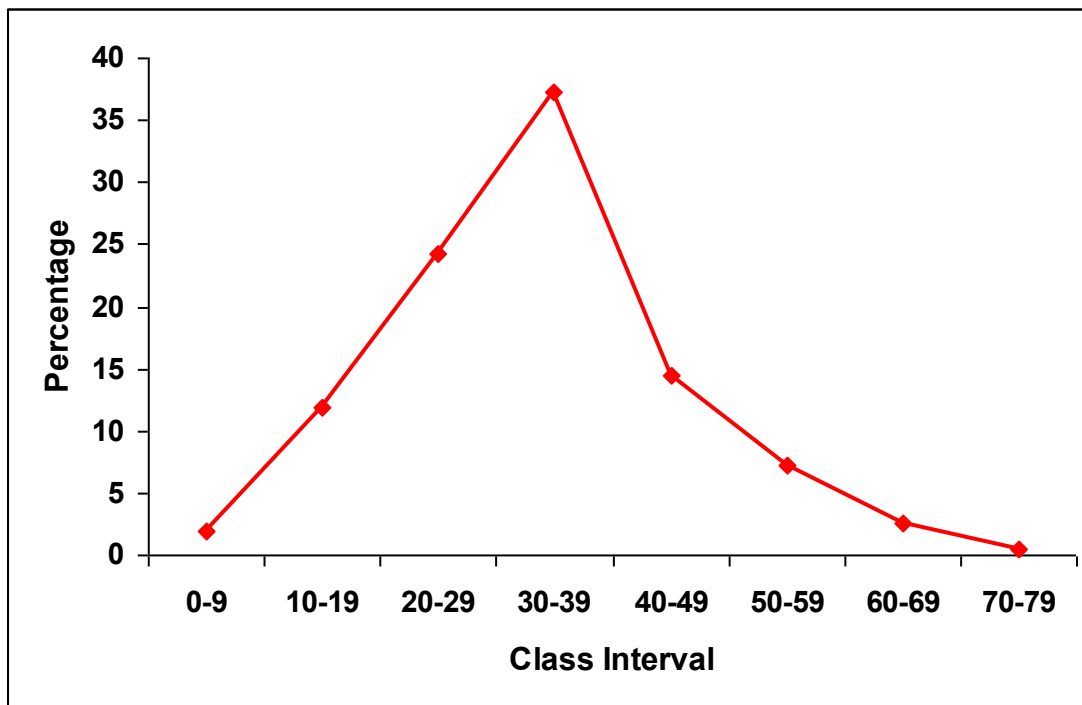


Figure 1.1: Distribution of Government Primary School Students on their Learning Achievement in Mathematics

The distribution pattern of learning achievement of government primary school students in mathematics along with mean, median and mode values indicates that government primary school students have a low level of learning achievement in mathematics.

2.1 LEARNING ACHIEVEMENT IN RELATION TO GENDER

The mean and standard deviation of government primary school boys and girls students in mathematics along with t-values, testing the significance of mean differences are given in Table 1.2.

Table 1.2

Gender-wise Mean Differences in Learning Achievement of Government Primary School Students in Mathematics

Subject	Gender	N	Mean	SD	t-value
Mathematics	Girls	456	33.30	14.46	0.76 ^{NS}
	Boys	449	32.66	10.48	

NS: Not significant at 0.05 level.

It is evident from Table 1.2 that the mean learning achievement of girls and boys students in mathematics came out to be 33.30 and 32.66 respectively. The t-value, testing the significance of the mean difference turned out to be 0.76 which is not significant even at 0.05 level of significance. This result indicates that there is no significant gender-wise mean difference in the learning achievement of government primary school students in mathematics. It may be concluded that girls and boys students are similar in terms of their learning achievement scores in mathematics.

Hence, it is concluded that the hypothesis i.e. *“The government primary school students will exhibit significant difference in their mean learning achievement in mathematics in terms of gender”* is not accepted.

2.2 LEARNING ACHIEVEMENT IN RELATION TO LOCATION

The mean scores and standard deviations of government primary school students belonging to rural and urban area in mathematics along with t-values are given in Table 1.3.

Table 1.3

Location-wise Mean Differences in Learning Achievement of Government Primary School Students in Mathematics

Subject	Location	N	Mean	SD	t-value
Mathematics	Urban	522	34.16	12.79	4.05**
	Rural	383	30.76	12.18	

** Significant at 0.01 level.

It is also evident from Table 1.3 that the mean learning achievement score of urban and rural government primary school students in mathematics came out to be 34.16 and 30.76 respectively. The t-value, testing the significance of mean difference turned out to be 4.05, which is significant at 0.01 level of significance. It implies that there exists significant difference between urban and rural primary school students with regard to their learning achievement scores in mathematics. It may be concluded that urban and rural primary school students are not similar in terms of their learning achievement scores in mathematics. Hence, it may be concluded that urban government primary school students have significantly better learning performance in mathematics than their rural counterparts.

So, the concerned hypothesis i.e. “*The government primary school students will exhibit significant difference in their mean learning achievement in mathematics in terms of location*” is accepted.

2.3 LEARNING ACHIEVEMENT IN RELATION TO SOCIAL-GROUP

The means and standard deviations of learning achievement of government primary school students in mathematics across different social-group, namely, scheduled caste (SC), backward class (BC) and general category are given in Table 1.4.

Table 1.4

Learning Achievement of Government Primary School Students in Mathematics in terms of Social-Group

Social-Group	N	Mathematics	
		Mean	SD
Scheduled Caste	455	32.31	10.21
Backward Class	263	30.48	15.47
General Category	187	38.12	12.32

The t-values, testing the significance of mean differences in learning achievement of government primary school students in mathematics, in terms of different social-groups are presented in Table 1.5.

Table 1.5

Mean Differences in Learning Achievement of Government Primary School Students in Mathematics in terms of Social-Group

Subject	SC vs BC	SC vs General	BC vs General
Mathematics	1.71	5.83**	5.75**

** Significant at 0.01 level.

It is also evident from Table 1.5 that general category students with the mean learning achievement score of 38.12 in mathematics differ significantly from their SC counterparts, the t-value being 5.75 is significant at 0.01 level of significance. Further, general category students with the mean learning achievement score of 38.12 in mathematics differ significantly from BC category counterparts, the t-value being 5.83 is significant at 0.01 level of significance. The BC group of students having a mean learning achievement score of 30.48 in mathematics do not exhibit significant difference from the SC group of students with a mean score of 32.31; the t-value 1.71 is not significant even at 0.05 level of significance.

This implies that social-group based difference in learning achievement of government primary school students is unfavourable to SC and BC category students in mathematics. The mean performance of the SC and BC category of students is significantly lower than the general category students in mathematics. However, SC and BC category students did not differ significantly in mathematics.

So, the concerned hypothesis, “*The government primary school students will exhibit significant difference in their mean learning achievement in mathematics in terms of social-group*” is partially accepted.

2.4 LEARNING ACHIEVEMENT IN RELATION TO PRE-PRIMARY EDUCATION

The learning achievement scores of government primary school students in mathematics in terms of pre-primary education along with t-values testing the significance of mean differences is given in Table 1.6.

Table 1.6

Learning Achievement of Government Primary School Students in Mathematics in terms of Pre-primary Education

Pre-Primary Education	N		Mathematics
Received	343	Mean	34.87
		SD	13.09
Not Received	562	Mean	31.83
		SD	12.23
t-value			3.49**

** Significant at 0.01 level.

It is evident from Table 1.6 that the mean learning achievement score of government primary school students having pre-primary education (M=34.87) in mathematics is significantly higher than their counterparts having no pre-primary education (M=31.83) as the t-value testing the significance of mean difference turned out to be 3.49 which is significant at 0.01 level of significance.

This implies that government primary school students having pre-primary education has significantly higher learning achievement in mathematics than their counterparts having no pre-primary education.

Hence, the concerned hypothesis i.e. *“The government primary school students will exhibit significant difference in their mean learning achievement in mathematics in terms of pre-primary education”* is accepted.

Conclusions

1. Government primary school students of Haryana have a low level of learning achievement in mathematics.
2. There was no significant gender difference in learning achievement of government primary school students in mathematics.
3. Urban government primary school students had significantly better learning performance in mathematics than their rural counterparts.
4. There was social-group based difference in learning achievement of government primary school students, unfavourable to BC category students in mathematics. The mean performance of SC and BC category of students was significantly lower than the general category students in mathematics. However, SC and BC students did not differ significantly in mathematics.
5. Primary school students having pre- primary education had significantly higher learning achievement in mathematics than their counterparts having no pre- primary education.

Recommendations

Keeping in view the above mentioned findings, the recommendations are given as below;

1. The low level of learning achievement in mathematics is a pointer towards poor level of numeracy skills of government primary school students and needs attention of school authorities to take necessary steps to diagnose the crucial difficulty areas in mathematics. For this purpose, on one side, the school teachers are required to be trained for maximum

utilization of available resources in the school and community to make teaching-learning process more effective and on the other side parental awareness about their child's education are necessary for enhancement of learning achievement of primary school students.

2. To promote the academic culture for enhancing the levels of learning attainments, there is a dire need of reforming the role of SCERTs and DIETs, the content and process of classroom teaching and assessment system so that enrolled students especially from economically weaker sections may be looked after for their optimal learning.

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