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Status of the Performance of Learners in Mathematics at Elementary School Stage in Arunachal Pradesh: A Critical Study

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Abstract: ***The present study aimed to find out the performance of 7th grade learners in mathematics and the influences of socio –economic status, and academic anxiety level on the performance of 7th grade learners in mathematics at elementary school stage in Arunachal Pradesh. The study is conducted over a sample of 1910 students of Class - VII of five districts (Tawang, Papumpare, Lower Subansiri , East Siang and Lower Dibang Valley) of the state. Academic Achievement Test on Mathematics for Class – VII to measure the performance of students in mathematics, socio- economic status scale and academic anxiety scale were used to collect the data. It was found that socio-economic status and academic anxiety have greater impact on the performance in mathematics at elementary school stage. Higher socio-economic status has positive relationship with the performance of learners whereas high and low level of academic anxiety has negative impact on performance in mathematics.***
Keywords: Performance of Learners, Academic Anxiety, Socio-economic status, Elementary School Stage.

I. INTRODUCTION

Mathematics, also known as the mother of all Sciences, plays a vital role in every sphere of our life. But the Performance of learners in mathematics is not satisfactory in Arunachal Pradesh and is serious concern not only the state but also in the North eastern states of India. (Natioanl Achievement Survey Report -2107). Since , basic knowledge of mathematics is essentially required for our day-to- day life and also performance of learners in mathematics at elementary school stage is the base for higher studies In spite of many efforts taken by the government to improve the quality of education, the performance of learners in mathematics could not be improved upto satisfactory level. There are many factors which influence the performance of learners in mathematics at elementary school stage like, home environment, family size, poverty, professionalism of teachers, school environment, academic anxiety socio-economic status, school resources etc. Present study has been carried out taking a few factors to know its impact on the performance of learners in mathematics at elementary school stage in Arunachal Pradesh. Paria (1996), Hussain (1997) Mukharjee (1997), Singh & Pandey (2006) Kapoor, K. C. & Sinha B.P. (2010): Kapoor and Lhungdim. (2014) carried out the studies on performance of learners in mathematics at different levels of students and all of them agreed upon the fact that performance of learners were not upto the satisfactory level. These studies were carried out with limited variables. In Arunachal Pradesh, a few studies have been carried out so far related to the performance of learners in mathematics in a few districts. Thus, the researcher has tried to find out the improvement in performance of mathematics of 7th grade learners and influence of socio-economic status and academic anxiety of learners on their performance in the subject mathematics..

II. OBJECTIVES OF THE STUDY

A. To assess the status of academic performance in Mathematics of 7th grade learners of Arunachal Pradesh.
B. To study the influence of sex, caste, settlement, socio-economic status and anxiety and their interactions on academic performance in mathematics of 7th grade learners of Arunachal Pradesh.

III. HYPOTHESES

A. There is no significant difference between the academic performance in mathematics mean scores of 7th grade boys and girls of five districts of Arunachal Pradesh.
B. There is no significant difference between the academic performance in mathematics mean scores of 7th grade tribal and non-tribal learners of five districts of Arunachal Pradesh .
C. There is no significant difference between the academic performance in mathematics mean scores of 7th grade urban and rural learners of five districts of Arunachal Pradesh.

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D. There is no significant difference between academic performance in mathematics mean scores of 7th grade learners of high Socio- economic status and low socio-economic- status of five districts of Arunachal Pradesh

E. There is no significant difference between the academic performance in mathematics mean scores of 7th grade learners of low academic anxiety and high academic anxiety of five districts of Arunachal Pradesh

IV. METHODOLOGY

A. In the present research 'Descriptive cum Normative Survey' method has been used.

B. Population of study was 7th grade learners from five districts of Arunachal Pradesh. During the session 2017-18, there were 4206 (boys-1860 and girls -2346) students studying in class-VII (Source : UDISE-2017-18).

C. The sample of the study was 1910 (boys-878 and girls- 1032) approximately 45% of students studying in class-VII of five districts viz Tawang, Papumpare, Lower Subansiri, East Siang, and Lower Dibang Valley districts of Arunachal Pradesh. The sample was selected stratified random sampling method in which 66 schools from five districts were selected.

D. The Academic Achievement test for 7th grade learners in mathematics and Socio-economic status scale were developed and standardized by the investigator. Standardized academic anxiety scale for children developed by A K Singh, Professor, Patna University & Dr A Sen Gupta College of Commerce, Patna were procured from National Psychological Corporation, Agra and were administered on selected samples for collection of data. Inferential statistical techniques like mean, standard deviation and t-test were used for analysis of data.

1) Major Findings of the Study: After the evaluation of administered papers, the scores were organized and tabulated for objective wise for analysis and interpretation of data:

a) Objective – 1. To assess the status of performance in Mathematics of 7th grade learners of Arunachal Pradesh (2017-18).

Table No 1: Showing the mean and standard Deviation of Performance in mathematics of 7th grade learners of five districts of Arunachal Pradesh. .

Number of students	Mean	Standard Deviation
1910	41.22	16.01

Source: Field Work (2017-18).

From above table no-1, it is found that the computed mean score of performance in mathematics is 41.22 out of the maximum 100 marks of the test. The computed mean score (41.22) is quite indicative of extremely poor performance of 7th grade learners in mathematics during the academic session: 2017-18. Further it has been observed that 82% of 7th grade learners were found below to the computed mean score and only 4% learners could obtain between 60 % to 80 % marks in mathematics whereas above 80% marks were obtained by 1.6% learners only. This shows more decline in the performance in mathematics than the previous studies. However, computed standard deviation (16.01) is indicating large variation from calculated mean score (41.22) of performance in mathematics..

b) Objective: 2:00 To study the influence of sex, caste, settlement , socio-economic status, anxiety and intelligence and their interactions on academic performance in mathematics of 7th grade learners of Arunachal Pradesh

c) Objective: 2.01 To study the difference between the academic performance in mathematics mean scores of 7th grade boys and girls of five districts of Arunachal Pradesh (2017-18).

d) Hypothesis1: There is no significant difference between the academic performance in mathematics mean scores of 7th grade boys and girls of five districts of Arunachal Pradesh

Table No 2: Showing the comparison between the academic Performance in mathematics of 7th grade learners of five districts by sex (2017-18).

Group of Learners	Number of learners	Means scores	Standard deviation	t-value	Remark
Boys	891	41.31	16.07	0.25	Not significant 0.05 level
Girls	1019	41.13	15.95		

Source : Field Work (2017-18),

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1) *Interpretation:* From above table no-2 it is clear that the calculated t-value is 0.25 which is lesser than the criterion t-value (1.96) at 0.05 level of confidence for 1908 df. It indicates that the formulated hypothesis: *There is no significant difference between the academic performance in mathematics mean scores of 7th grade boys and girls of five districts of Arunachal Pradesh,* is accepted . From this it is interpreted that there is no significant difference in the performance in mathematics mean scores of 7th grade boys and girls. Further, it has also been observed that the mean scores of 7th grade boys is approximately equal to the girls, yet performance of both groups are extremely poor in mathematics because their mean score is less than the mean score (50) of achievement test. Due to large value of standard deviations, it can be said that that there is large variation from mean score in both the groups.
2) *Objective – 2.02:* To study the difference between the academic performance in mathematics mean scores of 7th grade tribal and non-tribal learners of five districts of Arunachal Pradesh (2017-18).
3) *Hypothesis-2:* There is no significant difference between the academic performance in mathematics mean scores of 7th grade tribal and non-tribal learners of five districts.

Table No -3: Showing the Comparison between the academic Performance in mathematics of 7th grade learners of five districts by caste (2017-18).

Group of Learners	No of learners	Means scores	Standard Deviation	t-value	Remarks
Tribal	1228	40.72	15.70	1.79	Not significant
Non-Tribal	682	42.11	16.52		

Source: Field Work (2017-18),

1) *Interpretation:* The Table no–3 shows that the computed t-value is 1.79 which is lesser than the criterion t-value (1.96) at 0.05 level of confidence for 1908 df. Hence, the formulated hypothesis: *There is no significant difference between the academic performance in mathematics mean scores of 7th grade tribal and non-tribal learners of five districts of Arunachal Pradesh,* is retained and it is interpreted that the tribal and non-tribal 7th grade learners do not differ in their performance in mathematics. Both, due to low mean score, both the tribal and non-tribal 7th grade learners are equally poor in their performance of mathematics.
2) *Objective – 2.03:* To study the difference between the academic performance in mathematics mean scores of 7th grade urban and rural learners of five districts of Arunachal Pradesh (2017-18).
3) *Hypothesis-3:* There is no significant difference between the academic performance in mathematics mean scores of 7th grade urban and rural learners of five districts.

Table No- 4: Showing the comparison between the Performance in mathematics of 7th grade learners of five districts by settlement (2017-18).

Group of Learners	No of learners	Means scores	Standard deviation	t-value	Remarks
Urban	648	41.81	16.52	1.15	Not Significant
Rural	1262	40.91	15.7		

Source : Field Work (2017-18),

1) *Interpretation:* It is indicted by Table no- 4 that the calculated t-value was found to be 1.15 which is lesser than the criterion t-value (1.96) at 0.05 level of confidence for 1908 df., the Therefore, the formulated hypothesis: *There is no significant difference between the academic performance in mathematics mean scores of 7th grade urban and rural learners of five district,,* is retained and it is interpreted that the performance mean scores of 7th grade urban and rural learners have been found equally poor in mathematics. The standard deviation of both the groups are approximately same but very high which reduces the consistency of performance in mathematics.
2) *Objective – 2.04:* To compare the performance in mathematics mean scores of 7th grade learners with their socio-economic status of five districts of Arunachal Pradesh. (2017-18).
3) *Hypothesis- 4:* There is no significant difference between the academic performance in mathematics mean scores of 7th grade learners of high socio- economic status and low socio- economic status.

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Table No– 5. Showing the comparison between the Performance in mathematics of 7th grade learners of five districts by socio-economic status (2017-18).

Group of Learners	No of learners	Means scores	Standard deviation	t-value	Remarks
Low socio –economic status	647	39.85	13.14	3.93	Significant
High socio–economic status	413	44.48	21.53		

Source : Field Work (2017-18),

1) *Interpretation:* From above table no-5, it is observed that the computed t-value is 3.93 which is greater than the criterion t-value (2.58) at 0.01 level of confidence for 1158 df. Therefore the computed t-value (3.93) has been found significant and the formulated hypothesis*: There is no significant difference between the performance in mathematics mean scores of 7th grade learners of high socio- economic status and low socio- economic status, is* rejected. It is interpreted that the performances of 7th grade learners of high socio- economic status and low socio- economic status differ significantly in their performance of mathematics. It is found that the mean score (44.18) of 7th grade learners of high socio- economic status is more than the mean score (39.85) of learners belonging to low socio – economic status. Thus, the performance of learners of high socio- economic status is better than performance of learners belongs to low socio – economic status. Also, the standard deviation of performance of learners of low Socio-economic status (39.85) group and high socio-economic status(44.48) group showed more variation which is a matter of serious concern.
2) *Objective – 2.05:* The investigate the relationship between the academic performance in mathematics mean scores of 7th grade learners of low academic anxiety and high academic anxiety of five districts of Arunachal Pradesh (2017-18).
3) *Hypothesis-5:* There is no significant difference between the academic performance in mathematics mean scores of 7th grade learners of low academic anxiety and high academic anxiety of five districts .

Table No-6: Showing the comparison between the Performance in mathematics of 7th grade learners of five districts by academic anxiety level (2017-18).

Group of Learners	No of learners	Mean score	Standard Deviation	t- value	Remarks
Low academic anxiety	781	40.30	14.78	1.04	Not significant
High Academic anxiety	699	41.15	16.41		

Source : Field Work (2017-18),

1) *Interpretation:* Table no-6 indicates that the computed t-value was found to be 1.04, which is lesser than the criterion t-value (1.96) at .05 level of confidence for 1478 df. Therefore the computed t-value (1.04) has not been found significant and the formulated hypothesis: *There is no significant difference between the performance in mathematics mean scores of 7th grade learners of low academic Anxiety and high academic anxiety of five districts,* is retained and from this it is interpreted that the 7th grade learners of *low* academic anxiety and high academic anxiety of learners in mathematics do not differ in their academic achievement of mathematics subject. But the mean score of learners having low anxiety (40.30) is slightly less than mean score of learners with high anxiety. And performance mean score of learners with average academic anxiety is found to be 45.52 which shows that the performance of learners of moderate anxiety in mathematics is better than the learners of high academic anxiety and low academic anxiety which is given below in table no -7

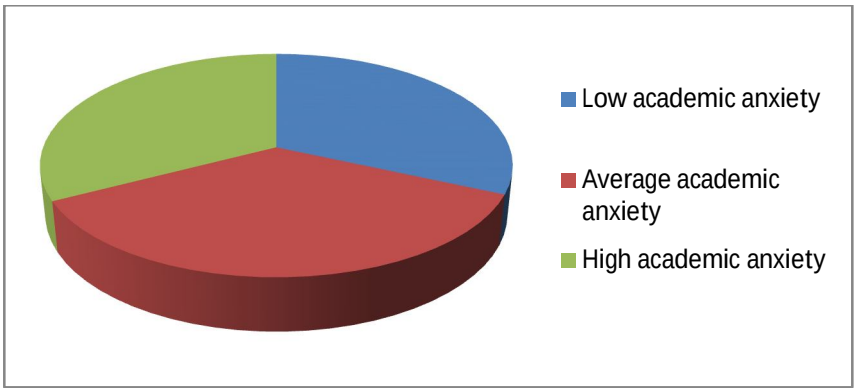
Table No - 7 : Showing the mean score of academic achievement of 7th grade learners in mathematics with three different academic anxiety level of learners

Type of anxiety	Mean score
Low academic anxiety	40.3
Average academic anxiety	45,52
High academic anxiety	41.5

Source: Field Work (2017-18),

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It has been illustrated with pie- diagram



V. DISCUSSION OF THE RESULT

After analysis of the data, it was found that the performance in mathematics of 7th grade learners in mathematics of Arunachal Pradesh is extremely poor and is also supported by Annual Survey of Educational Report (ASER -2018). The performance in mathematics mean scores of 7th grade boys and girls were approximately equal but less than mean score of test which indicates that they were equally poor in mathematics. .Also the tribal and non-tribal, urban and rural 7th grade learners did not differ in their performance in the subject mathematics in Arunachal Pradesh. 82% of 7th grade learners of five districts were found below the average which means it is a matter of serious concern in the state. It was found the performance of 7th grade learners of high socio-economic status did better than learners of low socio – economic status. This indicates that learners of high socio-economic status got support through private tuition and coaching etc. Further, the performance in mathematics 7th grade learners of low academic anxiety and high academic anxiety were approximately same but the learners with moderate anxiety level had done better.

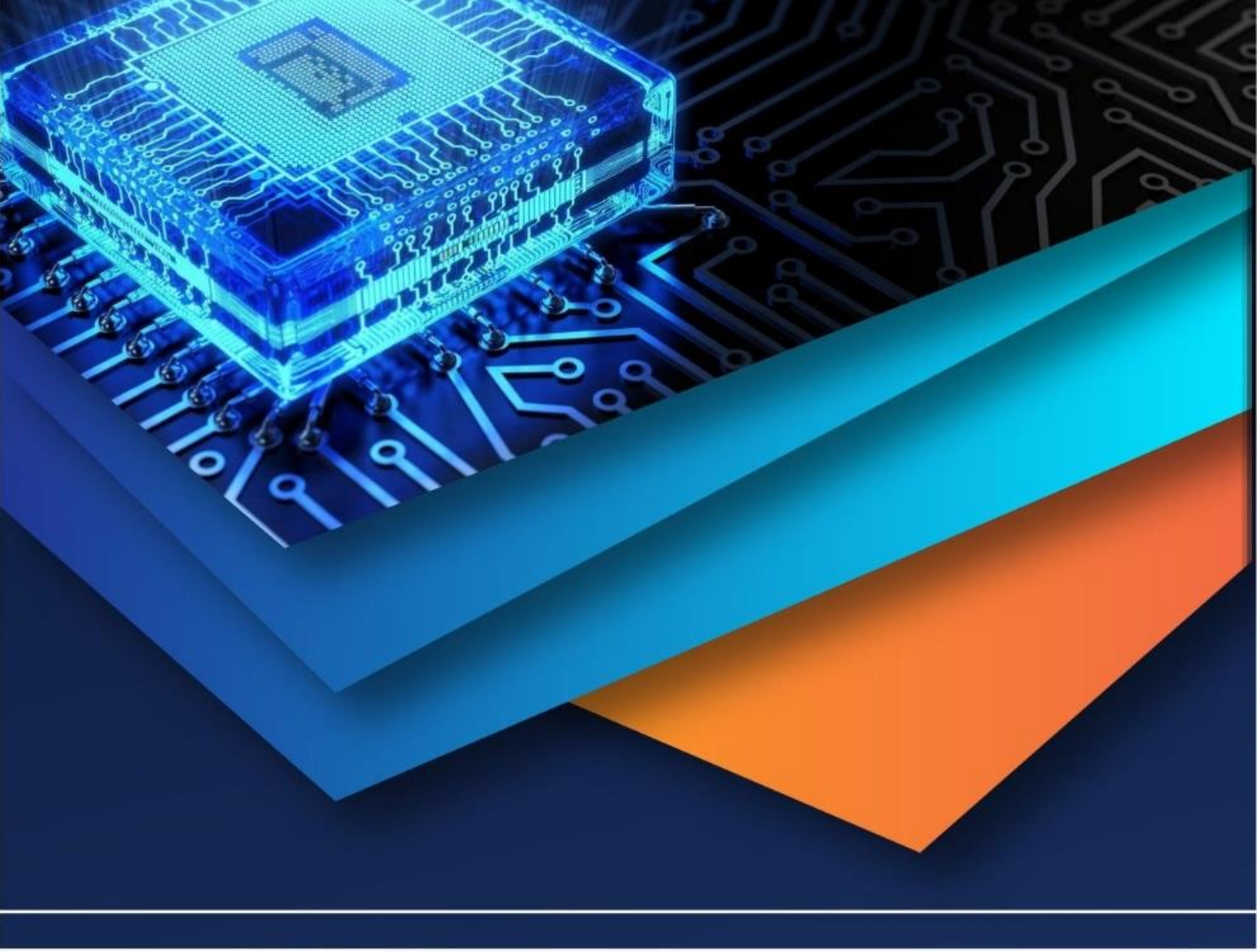
VI. CONCLUSION

On the basis of above findings, it can be concluded that the performance of 7th grade learners in mathematics is extremely poor in mathematics. The performance of boys and girls, tribal & non- tribal and urban & rural 7th grade learners are same and extremely poor which is supported by ASER -2018. The Performance of 7th grade learners of high socio-economic status is better than the learners of low socio-economic status because the learners of high socio-economic status have opportunities for coaching and tuition from private tutor or coaching centers. Low and high academic anxiety of 7th grade learners in mathematics have the negative influence in their performance but the performance of moderate anxiety level of learners is better in comparison to both. As the performance of learners are extremely poor in all the cases and is a matter of serious concern. If same conditions prevail then the condition will deteriorate day by day and it will become difficult to restore and uplift. Hence, it is suggested that the education authority will take suitable steps for improvement in the performance of learners in mathematics in Arunachal Pradesh.

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