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# A Comparative Study on Academic Performance of 7th Grade Learners in Mathematics of Lower Subansiri and East Siang Districts of Arunachal Pradesh- A Critical Study

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**Abstract**

The aim of present study was to compare the academic performance of 7th grade Learners in Mathematics of Lower Subansiri and East Siang Districts of Arunachal Pradesh The study was conducted over a sample of 843 students of Class - VII of two districts ( Lower Subansiri District - 332 and East Siang District -511) of Arunachal Pradesh, Achievement test and Socio–Economic status scale were developed and standardized by investigator and the same were used for the purpose of data collection. It was found that the performance of 7th grade learners in mathematics was extremely poor. Simultaneously, there was significant difference between the academic performance of 7th grade learners between the learners (male and female, tribal and rural) of Lower Subansiri and East Siang Districts. But there was no significant difference between the academic performance of 7th grade non-tribal learners and urban learners Also, there was no significant difference in performance of learners belonging to high Socio- Economic status and Low Economic Status as most of the learners high socio–economic category in these districts study in private managed schools/ Govt Aided schools not in Govt Schools.

**Keywords:** Performance of Learners, Sex, Settlement and Caste Elementary School Stage.

**Introduction**

From ancient times mathematics is treated as vehicle for development of human civilization. In all the branches of science, it plays an important role for research and development. Besides that people used the mathematical concepts in exchange of goods when there was no currency and hence its impact on our daily life can not be denied. To pursue career in engineering and technology , knowledge of mathematics is very important and for this purpose hard labour, regular practices along with better understanding of the concepts from elementary school stage is essentially required. Besides that there are many variables that influence the performance of learners in mathematics like (i) psychological variables related to academic achievement of learners which includes attitudes towards mathematics, intelligence, mathematics anxiety, self concept, study habit, mathematical aptitude, numeral ability, achievement motivation, cognitive style, interest in mathematics, self esteem, test anxiety, reading ability, problem solving ability, education and occupation aspirants, personal adjustment, locus of control, emotional ability, confidence in mathematics (ii) Social variables like Socio-economic status (SES) , school environment, Home environment, parent education, father's occupation, income of father, social status, social relation, type of school, teacher's expectation, social maturity. (iii) Biographical and instructional variables line gender, locality, methods of instruction, caste, birth order, teaching effectiveness and home tutoring. In this research, Sex, Settlement and Caste variables are taken for comparison of performance of learners.

**Review of Literature**

Many researches had been carried out by many scholars related to this area like Alam, M.M, (2006). Ayado, T.M.O. et al. (2012). Baruah,

G.S. (2017). Battle, J. and Michael Lewis (2002). Beatley Bancroft (1932), Bempechat, J.(1990). Caro, Daniel H., M.C. Donald, James Ted, Williams (2009), and all of them agreed upon the poor performance of learners of mathematics since independence and still improvement in the north eastern region of India is not satisfactory.

In Arunachal Pradesh a few studies like Kapoor and Sinha (2010), Kapoor and Lhungdim (2014) etc have been carried out so far related to the performance of learners in mathematics taking sex, caste and settlement variables. Thus, the researcher has tried to find out the relationship between the performance of learners of two districts (Lower Subansiri and East Siang) in mathematics with additional variable socio-economic status of learners.

**Objectives of the Study**

1. To assess the status of academic performance of $7^{th}$ grade learners in Mathematics in Lower Subansiri and East Siang districts of Arunachal Pradesh (2017-18).
2. To compare the academic performance of $7^{th}$ grade learners in mathematics in Lower Subansiri and East Siang Districts with respect to sex, settlement and caste.
3. To compare the influence of socio-economic status on academic performance in mathematics of class-VII standard learners of Lower Subansiri and East Siang Districts.

**Hypotheses**

1. There is no significant difference between the academic performance in mathematics mean scores of $7^{th}$ grade male learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.
2. There is no significant difference between the academic performance in mathematics mean scores of $7^{th}$ grade female learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.
3. There is no significant difference between the academic performance in mathematics mean scores of $7^{th}$ grade rural learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.
4. There is no significant difference between the academic performance in mathematics mean scores of $7^{th}$ grade urban learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.
5. There is no significant difference between the academic performance in mathematics mean scores of $7^{th}$ grade tribal learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.
6. There is no significant difference between the academic performance in mathematics mean scores of $7^{th}$ grade non-tribal learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.
7. There is no significant difference between academic performance in mathematics mean scores of $7^{th}$ grade learners of high Socio-economic status and low socio-economic- status of Lower Subansiri District and East Siang District of Arunachal Pradesh

**Methodology**

1. In the present research 'Descriptive cum Normative Survey' method has been used.
2. Population of study was $7^{th}$ grade learners from five districts of Arunachal Pradesh. During the session 2017-18. There were 1865 (Lower Subansiri boys-236 and girls–267 and East Siang, boys-607 and girls- 755) students studying in class-VII (Source: UDISE-2017-18).
3. The sample of the study was 843 ( boys-416 and girls- 427) approximately 45.2% of students studying in class-VII of two districts viz Lower Subansiri, and East Siang, districts of Arunachal Pradesh. The sample was selected by stratified random sampling method in which 25 schools from two districts were selected.
4. Achievement Test and Socio- Economic Status scale, Developed and standardized by investigator 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.

**Major Findings of the Study**

After the evaluation of administered papers, the scores were organized and tabulated for objective wise analysis and interpretation of data:

**Objective: 1**

To assess the status of academic performance of $7^{th}$ grade learners in mathematics of Arunachal Pradesh (2017-18)

For achieving this objective, following table has been used:

**Table No – 1: Showing the performance mean score in mathematics and standard deviation of Govt Schools of Two districts of Arunachal Pradesh**

| Sl No | Name of districts | Mean score | Standard Deviation | Coefficient of Variation $(\frac{\sigma}{\bar{x}} x100)$ |
|---|---|---|---|---|
| 1. | Lower Subansiri District | 38.72 | 14.03 | 36.2345 |
| 2. | East Siang District | 43.30 | 17.27 | 39.88453 |

**Interpretation**

From table No-1, it is obvious that mean score of performance of learners in mathematics in both districts are below average marks (50) of Achievement test. It signifies that learners of all the districts are extremely poor. But most important fact the standard deviation of all the districts are very high and it is a matter of serious concern. Coefficient of variation is also high which shows low consistency in the result. It is also in consistency with ASER report 2017-18 in which the average score of learners in Mathematics of Class-, V and VIII were 49,39 and 33 respectively of Arunachal Pradesh.

**Hypothesis: 1**

There is no significant difference between the performance mean score in mathematics of 7th grade learners in mathematics of Lower Subansiri and East Siang Districts of Arunachal Praesh.

**Table No- 2: Summary of Computed Academic Performance Mean scores in Mathematics, Standard Deviations, $SE_D$, and t-value of Class-VII Standard Learners of Lower Subansiri and East Siang Districts**

| Name of Districts | N | Mean score | SD | $SE_D$ | t- value |
|---|---|---|---|---|---|
| **Lower Subansiri** | 332 | 38.72 | 14.03 | 1.08 | 4.22 |
| **East Siang** | 511 | 43.30 | 17.27 | | |

**Interpretation**

The means of score of Lower Subansiri district is 38.72 and East Siang district is 43.3. (df= 841, t value= 2.58 at 0.01 level of significance ). The difference in means of score between the two districts is 4.58 which is significant and shows that the average performance of learners in mathematics of East Siang district is better than their counterparts of Lower Subansiri district. The t value obtained (4.22) is greater than the table value of t i.e. 2.58, so the null hypothesis is rejected. This means that there is significant difference in academic performance of class-VII standard learners in mathematics of Lower Subansiri and East Siang districts of Arunachal Pradesh.

**Objective 2**

To compare the academic performance of 7th grade learners in mathematics in Lower Subansiri and East Siang Districts with respect to sex, settlement and caste.

**Objective 2.01**

To compare the academic performance of 7th grade learners in mathematics in Lower Subansiri and East Siang Districts with respect to gender/Male.

For the purpose of achieving the objective – 2.01 and testing its hypothesis, the table 3 has been used.

**Hypothesis 2**

There is no significant difference between the academic performance mean scores in mathematics of Class-VII standard male learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.

**Table No –3**

**Summary of Computed Academic Performance Mean scores in Mathematics, Standard Deviations, $SE_D$, and t-value of Class-VII Standard Male Learners of Lower Subansiri and East Siang Districts.**

| Name of Districts | N | Mean score | SD | SED | t- value |
|---|---|---|---|---|---|
| Lower Subansiri | 115 | 38.73 | **13.72** | **1.67** | **2.85** |
| East Siang | 261 | 43.5 | **17.41** | | |

**Interpretation**

The means of score of male learners of Lower Subansiri district is 38.73 and East Siang district is 43.5. (df=374, t value= 2.59 at 0.01 level of significance). The difference in means of score between the two districts is 5.23 which is significant and shows that the average performance of learners in mathematics of East Siang district is better than its counterparts of Lower Subansiri district. The t value obtained (2.85) is greater than the table value of t i.e. 2.59 at 0.01 level of significance, so the null hypothesis is rejected. This means that there is significant difference in academic performance of class-VII standard male learners in mathematics of Lower Subansiri and East Siang districts of Arunachal Pradesh.

**Objective 2.02**

To compare the academic performance of 7th grade learners in mathematics in Lower Subansiri and East Siang Districts with respect to gender/Female of Arunachal Pradesh.

For the purpose of achieving the objective – 2.02 and testing its hypothesis, the table No -4 has been used.

**Hypothesis 3**

There is no significant difference between the academic performance mean scores in mathematics of Class-VII standard female learners of Lower Subansiri District and East Siang District .

**Table No.–4**

**Summary of Computed Academic Performance Mean scores in Mathematics, Standard Deviations, $SE_D$, and t-value of Class-VII Standard female Learners of Lower Subansiri and East Siang Districts.**

| Name of Districts | N | Mean score | SD | SED | t- value |
|---|---|---|---|---|---|
| Lower Subansiri | 177 | 38.71 | 14.13 | 1.52 | 2.88 |
| East Siang | 250 | 43.08 | 17.09 | | |

**Interpretation**

The means of score of female learners of Lower Subansiri district is 38.71 and East Siang district is 43.08. (df= 427, t value= 2.59 at 0.01 level of significance ). The difference in means of score between the two districts is 4.37 which is significant and shows that the average performance of learners in mathematics of East Siang district is better than its counterparts of Lower Subansiri district. The t value obtained (2.88) is greater than the table value of t i.e. 2.59 at 0.01 level of significance, so the null hypothesis is rejected. This means that there is significant difference in academic performance of class-VII standard female learners in mathematics of

Lower Subansiri and East Siang districts of Arunachal Pradesh

**Objective 2.03**

To compare the academic performance of 7th grade learners in mathematics in Lower Subansiri and East Siang Districts with respect to settlement of Arunachal Pradesh.

For the purpose of achieving the objective – 2.03 and testing its hypothesis, the table No -5 has been used.

**Hypothesis 3**

There is no significant difference between the academic performance mean scores in mathematics of Class-VII standard rural learners of Lower Subansiri District and East Siang District .

**Table No.–5**

**Summary of Computed Academic Performance Mean scores in Mathematics, Standard Deviations, $SE_D$, and t-value of Class-VII Standard Rural Learners of Lower Subansiri and East Siang Districts**

| Name of Districts | N | Mean score | SD | SED | t- value |
|---|---|---|---|---|---|
| Lower Subansiri | 282 | 37.99 | 10.42 | 1.24 | 3.78 |
| East Siang | 276 | 42.67 | 17.81 | | |

**Interpretation**

The means of score of rural learners of Lower Subansiri district is 37.99 and East Siang district is 42.67. (df= 556, t value= 2.59 at 0.01 level of significance ). The difference in means of score between the two districts is 4.68 which is significant and shows that the average performance of rural learners in mathematics of East Siang district is better than its counterparts of Lower Subansiri district. The t value obtained (3.78) is greater than the table value of t i.e. 2.59 at 0.01 level of significance, so the null hypothesis is rejected. This means that there is significant difference in academic performance of class-VII standard rural learners in mathematics of Lower Subansiri and East Siang districts of Arunachal Pradesh

**Objective 2.04**

To compare the academic performance of 7th grade learners in mathematics in Lower Subansiri and East Siang Districts with respect to settlement of Arunachal Pradesh.

For the purpose of achieving the objective – 2.04 and testing its hypothesis, the table No -6 has been used.

**Hypothesis 4**

There is no significant difference between the academic performance mean scores in mathematics of Class-VII standard urban learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.

**Table No –6**

**Summary of Computed Academic Performance Mean scores in Mathematics, Standard Deviations, $SE_D$, and t-value of Class-VII Standard Urban Learners of Lower Subansiri and East Siang Districts.**

| Name of Districts | N | Mean score | SD | SED | t- value |
|---|---|---|---|---|---|
| Lower Subansiri | 50 | 42.8 | 24.7 | 3.52 | 0.35 |
| East Siang | 235 | 44.03 | 6.48 | | |

**Interpretation:** The means of score of urban learners of Lower Subansiri district is 42.80 and East Siang district is 44.03. (df= 283, t value= 2.59 at 0.01 level of significance ). The difference in means of score between the two districts is 1.23 which is not significant and shows that the average performance of urban learners in mathematics of East Siang district is same as that its counterparts of Lower Subansiri district. The t value obtained (0.35) is less than the table value of t i.e. 2.59 at 0.01 level of significance, so the null hypothesis is accepted. This means that there is no significant difference in academic performance of class-VII standard urban learners in mathematics of Lower Subansiri and East Siang districts of Arunachal Pradesh

**Objective 2.05**

To compare the academic performance of 7th grade learners in mathematics in Lower Subansiri and East Siang Districts with respect to settlement of Arunachal Pradesh.

For the purpose of achieving the objective – 2.05 and testing its hypothesis, the table No -7 has been used.

**Hypothesis 5**

There is no significant difference between the academic performance mean scores in mathematics of Class-VII standard tribal learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.

**Table No. –7**

**Summary of Computed Academic Performance Mean scores in Mathematics, Standard Deviations, $SE_D$, and t-value of Class-VII Standard tribal Learners of Lower Subansiri and East Siang Districts.**

| Name of Districts | N | Mean score | SD | SED | t- value |
|---|---|---|---|---|---|
| Lower Subansiri | 284 | 38.55 | 13.02 | 1.21 | 3.89 |
| East Siang | 317 | 43.27 | 16.65 | | |

**Interpretation**

The means of score of tribal learners of Lower Subansiri district is 38.55 and East Siang district is 43.27. (df= 599, t value= 2.58 at 0.01 level of significance). The difference in means of score between the two districts is 4.72 which is significant

and shows that the average performance of tribal learners in mathematics of East Siang district is better than that its counterparts of Lower Subansiri district. The t value obtained (3.89) is greater than the table value of t i.e. 2.58 at 0.01 level of significance, so the null hypothesis is rejected. This means that there is significant difference in academic performance of class-VII standard tribal learners in mathematics of Lower Subansiri and East Siang districts of Arunachal

**Objective 2.06**

To compare the academic performance of 7th grade learners in mathematics in Lower Subansiri and East Siang Districts with respect to caste of Arunachal Pradesh.

For the purpose of achieving the objective – 2.06 and testing its hypothesis, the table No -8 has been used.

**Hypothesis 6**

There is no significant difference between the academic performance mean scores in mathematics of Class-VII standard non- tribal learners of Lower Subansiri District and East Siang District of Arunachal Pradesh.

**Table No –8**

**Summary of Computed Academic Performance Mean scores in Mathematics, Standard Deviations, $SE_D$, and t-value of Class-VII Standard non- tribal Learners of Lower Subansiri and East Siang Districts.**

| Name of Districts | N | Mean score | SD | SED | t- value |
|---|---|---|---|---|---|
| Lower Subansiri | 48 | 39.71 | 18.81 | 2.78 | 1.31 |
| East Siang | 194 | 43.34 | 8.22 | | |

**Interpretation**

The means of score of Non tribal learners of Lower Subansiri district is 39.71 and East Siang district is 43.44. (df= 240, t value= 2.59 at 0.01 level of significance). The difference in means of score between the two districts is 3.63 which is significant and shows that the average performance of non-tribal learners in mathematics of East Siang district is better than that its counterparts of Lower Subansiri district. The t value obtained (1.31) is less than the table value of t i.e. 2.59 at 0.01 level of significance, so the null hypothesis is accepted. This means that there is no significant difference in academic performance of class-VII standard urban learners in mathematics of Lower Subansiri and East Siang districts of Arunachal Pradesh.

**Objective 3**

To compare the influence of socio-economic status on academic performance in mathematics of class-VII standard learners of Lower Subansiri and East Siang Districts of Arunachal Pradesh.

For the purpose of achieving the objective – 3 and testing its hypothesis, the table No -9 has been used.

**Hypothesis 6**

There is no significant difference between the academic performance mean scores in mathematics of Class-VII standard learners of Low Socio Economic Status and High Economic Status of both Lower Subansiri District and East Siang District of Arunachal Pradesh.

**Table No –8**

**Summary of Computed Academic Performance Mean scores in Mathematics, Standard Deviations, $SE_D$, and t-value of Class-VII Standard Learners of Low Socio-Economic Status and High Socio-Economic Status of both Lower Subansiri and East Siang Districts.**

| Name of Districts | N | Mean score | SD | SED | t- value |
|---|---|---|---|---|---|
| Low SES | 227 | 41.09 | 18.02 | 1.77 | 0.58 |
| High SES | 229 | 42.12 | 19.72 | | |

**Interpretation**

The means of score of learners of Low Socio- Economic Status is 41.09 and High Socio Economic status is 42.12. (df= 454, t value= 2.59 at 0.01 level of significance ). The difference in means of score between the two districts is 1.03 in which the performance of low SES is lower than that of high SES and shows that the average performance of both the groups in mathematics of East Siang district is same as that of Lower Subansiri district. The t value obtained (0.58) is less than the table value of t i.e. 2.59 at 0.01 level of significance, so the null hypothesis is accepted . This means that there is no significant difference in academic performance of class-VII standard urban learners in mathematics of Lower Subansiri and East Siang districts of Arunachal Pradesh.

**Discussion of The Result**

After analysis of the data, it was found that performance of 7th grade learners in mathematics during the session 2017-18 was found to be extremely poor. The performance of learners in mathematics of male, female tribal and rural were found significant The performance of learners of East Siang District was found better than that of Lower Subansiri Distinct. But In case of non- tribal learners and urban learners of both districts were not found significant. That is their performance was same. The Socio Economic status of the learners of these districts were found to be same which indicates that socio Economic status does not influence the performance of learners in these district.

**Conclusion**

On the basis of above findings, it can be said that the performance of 7th grade learners in mathematics of both the districts were extremely poor. Still among them, the male, female, tribal and rural learners of East Siang districts had done better in comparison to the same category of learners of Lower Subansiri District . At the same time the learners of belonging to non-tribal category and Urban dwellers of both the districts were found to be same in academic performance in mathematics. Socio- Economic Status of the learners of Govt Schools in Lower Subansiri District and East Siang district did not have influence on the academic performance in mathematics of 7th grade learners.

**Educational Implications**

1. The performance of the 7th grade learners in Govt Schools of both Lower Subansiri and East Siang districts of Arunachal Pradesh of is alarming. So the Educational planners, the Administration and the practitioners are to put more efforts for improvement.
2. Classroom practices must be changed from teacher oriented to learner centred and for this purpose, teacher must to be trained to adopt the new approaches of teaching mathematics like – Contructivistic Approach and Learners Centered Approach as per the need of curriculum for improvement in performance.
3. Proper Monitoring Mechanism should be adopted and frequent assessment should be done.

**Suggestions**

1. Teachers should be suggested to give ample opportunities to the learners to interact with teachers and make more practice in mathematics.
2. If possible, practice works should be done in class room itself so that learners can get clarified their doubts immediately.
3. Adequate number of teaching–learning materials should be provided for elementary school learners to learn through concrete materials at elementary school stage.
4. State specific curriculum should be developed .in mathematics taking basic consideration of NCF 2005 to make mathematics more enjoyable for learners.

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