Learning Style of Secondary School Students in relation to Achievement in Mathematics

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Abstract- The present study was conducted in Prayagraj district to find out the learning style of urban and rural students and to know if there is any significant relationship in achievement in mathematics and learning style of secondary school students. A total of 600 urban and rural students were selected from various schools of Prayagraj District. A self-constructed tool for achievement in mathematics and Learning Style Inventory tool by K.S. Mishra (2012) was used to conduct the study. The study shows a significant relationship in the learning style of urban and rural students and further concluded that there is significant relationship between achievement in mathematics and learning style of urban and rural secondary school students.

Key Words: Achievement in Mathematics, Learning Styles, Secondary School.

INTRODUCTION
The fundamental goal of education is to improve each person's talents and capacities so that society as a whole can advance. According to its etymology the term education comes from the latin word educare which means to raise or to bring up. “By education, I mean the all-round drawing out of the best in child and man’s body, mind and soul”. - M. K. Gandhi.

According to Albert Einstein ‘Education is what remains after one has forgotten what one has learned in school’. One important function that educational institutions do is to guide their students from the darkness of ignorance to the light of knowledge by offering them learning experiences. The result of education is academic achievement, also known as academic performance, which measures how well a student, instructor, or institution has met their learning objectives. (Govindharaj P. & Paulpandi P. (2017)

Achievement in Mathematics
In general, academic achievement describes how well a student completes their assignments and studies. The student's "score" for each class and the entire academic year is the most well-known measure of academic success. (Govindraj P. & Paulpandi B. 2017). Mathematics is a crucial subject that is required to advance economic development particularly in developing and emerging nations. (Schulze S. & Bosman A. 2018). Achievement in mathematics is mostly determined by how well students perform on tests created by teachers or by standardized testing organizations. Nizoloman O. N. (2013).

Learning Styles
The preferred method by which a learner processes, comprehends, and retains knowledge is referred to as their learning style. (Mullick S. K. (2018). Every person learns and processes information in learning circumstances according to a natural or regular pattern. The terms "learning styles" refer to the typical methods or patterns that people employ during learning. (Rani R., Govil P. & Singh L. 2015) Students would better comprehend their main areas of learning if they were aware of their significant learning style. Second, it would facilitate the planning, arranging, and implementation of learning scenarios and evaluations by the administration and teachers. (Prasadh R. S. & Sumitha P. 2022).

Research question
(i) Is there any significant relationship in learning styles of rural and urban, secondary school students?
(ii) Is there any significant relationship between achievement in mathematics and learning style of Urban and rural secondary school students?

Objectives
(i) To know the learning style of Urban and Rural secondary school students.
(ii) To study the relationship between achievement in mathematics and learning style of Urban & Rural student.

Hypotheses
(i) There is no significant difference in the learning style of urban and rural secondary school students.
(ii) There is no significant relationship between achievement in mathematics and learning styles of urban and rural secondary school students.
Methodology
The current study used descriptive survey methodology in order to describe the learning style and academic achievement of secondary school students in the Prayagraj District.

Population and sample
The study comprised of secondary school students of Prayagraj District. The study included of 600 secondary school students of urban and rural secondary school students.

Tools used
1. Self constructed tool on achievement in mathematics for secondary school students.
2. Learning Style Inventory by K.S. Mishra (2012)

Analysis and interpretation
Objective 1: To know the learning style of Urban and Rural secondary school students.
It was hypothesize that secondary school pupils in urban and rural areas have similar learning styles. The general learning style and its six dimensions—enactive reproducing, constructive reproducing, figural reproducing, figural constructive verbal reproducing and verbal constructive have been used to test this null hypothesis. To test the hypothesis, t-ratios were computed. The outcomes are shown in Table 1.

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Urban (N=384)</th>
<th>Rural (N=216)</th>
<th>t-ratio</th>
<th>Df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enactive reproducing (ER)</td>
<td>27.11</td>
<td>26.01</td>
<td>2.05*</td>
<td>598</td>
<td>0.04</td>
</tr>
<tr>
<td>Enactive constructive (EC)</td>
<td>26.96</td>
<td>26.53</td>
<td>1.34</td>
<td>598</td>
<td>0.18</td>
</tr>
<tr>
<td>Figural reproducing (FR)</td>
<td>26.72</td>
<td>26.03</td>
<td>2.08*</td>
<td>598</td>
<td>0.03</td>
</tr>
<tr>
<td>Figural constructive (FC)</td>
<td>26.61</td>
<td>26.41</td>
<td>0.61</td>
<td>598</td>
<td>0.54</td>
</tr>
<tr>
<td>Verbal reproducing (VR)</td>
<td>26.35</td>
<td>26.51</td>
<td>2.48*</td>
<td>598</td>
<td>0.01</td>
</tr>
<tr>
<td>Verbal Constructive (VC)</td>
<td>26.73</td>
<td>26.12</td>
<td>1.74</td>
<td>598</td>
<td>0.08</td>
</tr>
<tr>
<td>Learning Style</td>
<td>159.89</td>
<td>156.60</td>
<td>1.99*</td>
<td>598</td>
<td>0.04</td>
</tr>
</tbody>
</table>

*Significant at 0.05 level

The null hypothesis that there is no significant difference in the learning styles of secondary school students based on locale is rejected because, as shown in Table No. 1, the t value of learning style of urban and rural secondary school students is coming to 1.99, which is more than the table value 1.96 at 0.05 level significance, and 598 df, which shows that there is significant difference between the learning style of urban and rural students. The t values for the various dimensions of learning style are as follows: (i) Figural reproducing (FR) is 2.08, Figural constructive (FC) is 0.61, and Verbal reproducing (VR) is 2.48. and Verbal constructive is 1.74 at the 0.05 level of significance. The graphical representation of the same is given below in figure 1.

Figure 1: Mean score of learning style of urban and rural secondary school students.
According to figure No. 1, where urban and rural secondary school students’ overall mean learning style scores are 159.89 and 156.6, respectively, it can be concluded that urban students’ learning styles are superior to those of rural students. Urban students have better learning methods than rural pupils, according to the mean of their many characteristics. In a related study published in 2022, Sumitha P. and Prasadh, R. P. (2022) found significant differences between the learning habits of math students in government and private colleges. The significant difference may be due to the fact that students come from a variety of socioeconomic backgrounds. While rural areas may have a higher proportion of lower income families, urban areas may have a more diverse socioeconomic mix. These differences may affect students’ access to resources like smart classes and educational books.

**Objective 2:** To study the relationship between achievement in mathematics and learning styles of urban and rural secondary school students.

The null hypothesis, which was tested using an achievement tool, the result shows that secondary school students in urban and rural areas differed from each other in terms of the relationship between their learning styles and mathematical achievement. The findings of the analysis are displayed in Table 2.

<table>
<thead>
<tr>
<th>Area</th>
<th>Variables</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>P</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>Achievement in Mathematics</td>
<td>384</td>
<td>69.58</td>
<td>16.9</td>
<td>0.00</td>
<td>0.775*</td>
</tr>
<tr>
<td></td>
<td>Learning Styles</td>
<td></td>
<td>160.46</td>
<td>22.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural</td>
<td>Achievement in Mathematics</td>
<td>216</td>
<td>65.96</td>
<td>14.14</td>
<td>0.00</td>
<td>0.699*</td>
</tr>
<tr>
<td></td>
<td>Learning Styles</td>
<td></td>
<td>159.33</td>
<td>12.65</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level

In the above table no. 2, the correlation coefficient for achievement in Mathematics and learning styles of urban secondary school students is 0.775 which is significant at 0.05 level and the correlation coefficient for achievement in Mathematics and learning styles of rural secondary school students is 0.699 which is also significant at 0.05 level. The ‘r’ value (Correlation coefficient) of urban students is better than their counterpart rural students but both urban and rural secondary students shows strong relationship between achievement in mathematics and learning style. Hence, the hypothesis that “There is no significant relationship between achievement in mathematics and learning styles of urban and rural secondary school students” is rejected. The correlation between math achievement and learning styles for urban secondary school students is 0.775 in Table No. 02 above, which is significant at the 0.05 level. Similarly, for rural secondary school students, the correlation is 0.699 at the 0.05 level. Although urban secondary students’ R value (Correlation value) is higher than that of their rural counterparts, there is still a significant correlation between learning style and mathematical success for both groups of students. Therefore, the claim that "There is no significant relationship between learning styles of urban and rural secondary school students and achievement in mathematics” is rejected. The graphical representation of the table is given in figures 2 and 3.

Figure 2: showing correlation between achievement in mathematics and learning style of urban secondary school students.
The figure no. 2 shows a strong correlation of achievement in mathematics with learning style of urban students as it can be seen that the line in the scatter diagram is moving towards upward direction showing a strong relation. The study conducted by Dr. Amina Bano Quari & Flah Sultan (2017) also found out that the academic achievement and learning style of urban students is better than the rural students.

The probable reason for a strong relationship between achievement in mathematics and learning styles for urban students may be that if the educators or educational institutes who are aware of their students learning styles might employ wide range of instructional methods to improve the learning style of students certain other factors can influence the learning styles such as socioeconomic status, teacher’s quality resources and parental support.

The figure no. 3 shows a strong correlation of achievement in mathematics with learning style of rural secondary school students.

The figure no. 3 shows a strong correlation of achievement in mathematics with learning style of rural students as it can be seen that the line in the scatter diagram is moving towards upward direction showing a strong relation between relation between achievement in mathematics and learning style of rural students.

Hence it can be concluded that the impact of learning style in achievement in mathematics is very strong for rural students. The probable reason for the same may be as it can be seen rural students are also aware of modern learning styles with the use of internet and mobile facilities, and students those who are serious in their studies will use the tools of learning styles effectively.

Conclusion:
The above study shows that there is noticeable difference in the learning style of urban and rural students as certain factors influence the study habits of the students like basic infrastructure facilities, libraries, transportation facilities, family background etc. on the other hand the study also highlights that if the learning styles are adopted and practiced effectively by urban or rural students enable them to perform better in their achievement in mathematics.

In the end it can be concluded that Students’ total achievement is significantly impacted by their learning styles. If a learner is aware of their preferred technique of studying, their academic career will benefit even more. By identifying their unique learning preferences, students can assess their strengths and limitations. The learner focuses on areas of weakness in their education and strengthens essential learning strategies. In addition, the learning style preferences of kids are impacted by their gender, the kind of school administration, the language or medium of instruction, the kind of school housing, and the location of the school.

REFERENCES: