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Learning style and school climate as determinants of academic achievement of higher secondary school students

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Abstract: This study is carried out with the aim of studying the learning style and school climate as determinants of academic achievement of higher secondary school students. For the study, the researcher collected 348 data from higher school students from Dildarnagar town, District Ghazipur, UP, with the help of the questionnaire. For analysis, t-tests and multiple regression statistical tests were used. The study revealed that there is no significant difference in the mean score of learning style and school climate of science and commerce higher school students; a significant difference was observed in the academic achievement of the science and commerce school students, and all the predictive variables significantly contributed in the student's criterion variable at 0.01 level of significance.

Keywords: Learning style, school climate, academic achievement, higher secondary school students.

Introduction

The educational landscape is multifaceted, influenced by various factors that show their contribution to student learning and achievement. Two critical aspects under scrutiny in this study are **learning style** and **school climate,** which are directly and indirectly linked with the student's achievement or performance. However, the learning style refers to an individual's preferred way of processing information, acquiring knowledge, and engaging with learning materials. According to **Karuna Shankar Misra (2012),** "Learning style refers to the way one internally represents experiences and recalls or processes information." When the learners are educated in accordance with their own learning styles, their cognitive ability starts improving, and their academic achievements seem to improve. In this regard, learning style is regarded as "the way in which individuals begin to concentrate on process, internalize, and retain new and difficult information" **(Dunn, 1990)**. Different students exhibit diverse learning styles, such as visual, auditory, kinesthetic, or a combination of these variations of learning styles can enhance teaching effectiveness and student outcomes. While the school climate encompasses the overall atmosphere, social interactions, and organizational culture within a school. It includes factors like safety, relationships, teacher-student interactions, peer dynamics, and the overall sense of belonging. **Adeogun & Olisaemeka (2011)** define "school climate as an aggregate measure of school characteristics such as the relationship between parent, teachers, and administrators as well as physical facilities on the ground." (Cohen, McCabe, Michelli & Pickeral, 2009) explain that **"**a positive school climate helps people feel socially, emotionally, and physically safe in schools. It includes students, parents, and school personnel's standards, views, relationships, teaching, and learning practices, as well as the organizational and structural structures of the school"**.** Understanding how these elements play a crucial role in students' life and are interconnected can provide valuable insights for educators, policymakers, and researchers. So, the researcher conducted a study on

learning style and school climate as determinants of academic achievement of higher secondary school students.

Objectives of the study

1. To find the difference in the learning styles, school climate and academic achievement of higher secondary school students with respect to the stream.
2. To identify the individual and combined contribution of predictive variables (Learning style and School Climate) on the criterion variable (academic achievement) of higher secondary school students.

Hypotheses of the study

H_0 1.1 There is no significant difference in the learning styles of science and commerce higher secondary school students.

H_0 1.2. There is no significant difference in the school climate of science and commerce higher secondary school students.

H_0 1.3. There is no significant difference in the academic achievement of science and commerce higher secondary school students.

H_0 2. There is no significant individual and combined contribution of predictive variables (Learning style and School Climate) on the criterion variable (academic achievement) of higher secondary school students.

Statistical Method Employed for the Analysis:

Sample

The researcher employed a simple random technique to collect 348 data from higher secondary school students (i.e., 11th and 12$^{th)}$ from the Dildarnagar town district of Ghazipur. The collected data can be analyzed with the help of the SPSS 20 version to draw meaningful understandings and conclusions.

Tools to be used in the existing study:

The researcher used the following questionnaire to collect data:

1. The learning style tool was developed by Prof. K.S. Mishra (2012).
2. School climate scale developed and standardized by the researcher**.**
3. Class X and XI results were taken into consideration for academic achievement.

Statistical techniques:

The researcher employed SPSS, an array of statistical procedures including a t-test, to evaluate the difference in mean scores for learning style, school climate, and academic achievement of students. The multiple regression examined the individual and combined contribution of independent variables (learning style and school climate) on the dependent variable (academic achievement).

Results and interpretations:

Objective 1: To find the difference in the learning styles, school climate and academic achievement of higher secondary school students with respect to the stream.

H_0 **1.1** There is no significant difference in the learning styles of science and commerce higher secondary school students.

Table 1: Showing the t-value of the learning style of higher secondary school students in relation to stream

Demographic Variables	N	M	SD	t- value	Significance level at 0.05
Science	196	145.51	13.84	0.92	**Accepted**
Commerce	152	144.04	15.81		

Interpretation: The calculated t-value of 0.92 is lower than the critical value from a t-table (1.96) at a 0.05 significance level. This concludes that the hypothesis i.e., "*There is no significant difference in the learning styles of science and commerce higher secondary school students.*" **is accepted**.

H_0 **1.2** There is no significant difference in the school climate of science and commerce higher secondary school students.

Table 2: Showing the t-value of school climate of higher secondary school students in relation to stream

Demographic Variable	N	M	SD	t- value	Significance level at 0.05
Science	196	145.70	14.75	0.65	**Accepted**
Commerce	152	146.65	13.05		

Interpretation: The intended t-value of 0.65 is lower than the critical value from a t-table (1.96) at a 0.05 significance level. This concludes that the hypothesis i.e., "*There is no significant difference in the school climate of science and commerce higher secondary school students*" **is accepted**.

H_0 **1.3** There is no significant difference in the academic achievement of science and commerce higher secondary school students.

Table 3: Showing the t-value of academic achievement of higher secondary school students in relation to stream.

Demographic Variables	N	M	SD	t- value	Significance level at 0.05
Science	196	71.76	9.66	2.18	**Rejected**
Commerce	152	69.45	9.95		

Interpretation: The calculated t-value of 2.18 is higher than the critical value from a t-table (1.96) at a 0.05 significance level. This concludes that the hypothesis i.e., "*There is no significant difference in the academic achievement of science and commerce higher secondary school students*" **is rejected.**

Objective 2: To identify the individual combined contribution of predictive variables (Learning style and School Climate) on the criterion variable (academic achievement) of higher secondary school students.

H_0 **2.** There is no significant individual and combined contribution of predictive variables (Learning style and School Climate) on the criterion variable (academic achievement) of higher secondary school students.

Table 4: ***Multiple Regression Model Summary of Predictive Variables and criterion Variables for higher Secondary School Students***

Model	Predictive Variables	R	R^2	R^2 Change	F Change	Sig.
1.	Learning style	.185	.183	.185	78.48**	.000
2.	School Climate	.201	.196	.016	6.99**	.009

** Significant at 0.01 level

Table 5: ***Summary of ANOVA for regression***

Model	Variation	Sum of Sq.	Df	Mean Sq.	F	Sig
1.	Regression	6763.438	2	3381.719	43.419**	.000
	Residual	26870.309	345	77.885		

	Total	33633.747	347			

** Significant at 0.01 level

Table 6: ***Regression coefficient***

Added variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Er	Beta		
(Constant)	19.388	5.957		3.255**	.001
Learning style	.260	.034	.389	7.713**	.000
School Climate	.094	.035	.134	2.645	.009

** Significant at 0.01 level

Interpretation: A Stepwise multiple regression analysis was helpful in identifying learning style and school climate as determinants of academic achievement of higher school students. The multiple correlation coefficient (R) mentioned in the above table 4 was found to be .201 with combined independence. The degree of predictability (R2) appears to be .196 for predictive variables to one criterion variable. The results indicate that predictive variables (learning style and school climate) combined contributed 19.6% of the variance in the criterion variable (academic achievement) of the school students. Hence, the null hypothesis, i.e., '*There is no significant individual and combined contribution of predictive variables (Learning style, and School Climate) on the criterion variable (academic achievement) of higher secondary school students,''* **is rejected**. Additionally, from the examination of the unstandardized coefficient, table 6 highlights that a positive B coefficient directs the direction of variation in the dependent and independent "variable in the same, i.e., higher scores in learning style and school climate will result in higher scores in academic achievement". Additional examination of R^2 change specifies that learning style contributed 18.5% of the variance, and school climate contributed 1.6% of the variance to the criterion variable (academic achievement).

Findings of the study:

1. Insignificant difference between the mean scores of learning styles of higher secondary school students in relation to the stream.
2. No significant difference between the mean scores of school climate of higher secondary school students in relation to the stream.
3. A significant difference between the mean scores of the academic achievement of higher secondary school students in relation to the stream.
4. There is a significant individual and combined contribution of predictive variables (Learning style and School Climate) on the criterion variable (academic achievement) of higher secondary school students.

Discussion of the study:

The current Study's outcome indicates that science and commerce higher secondary school students have no significant difference in their learning style. This finding is supported by the findings of the Muttulakshmi (2022) study, which shows 'no difference in the learning style of science and commerce students' and the study correspondingly stresses that science and commerce students have the same perception about school climate. Furthermore, more analysis explores that science and commerce school students' academic achievement is significantly different from each other's lineup with the Anandharaja et al. (2016) study. The last outcome of the study explores that learning style and school climate significantly contributed to the academic achievement of the higher secondary school students.

Conclusion:

In conclusion, the findings suggest that higher secondary school students show no difference in learning style and school climate, irrespective of their academic streams. Furthermore, there is a noticeable difference in the academic achievement of the students based on their academic streams. The study also makes known that learning style and School climate contributed to 19.6% in the academic achievement of secondary school students. These insights shed light on learning style and school climate, which are positive contributors to improving academic achievement, and highlight areas where further exploration and intervention could be beneficial for educational institutions and schools.

Suggestions for improving students' academic achievement:

1. Provide a conducive environment for the students to feel free to express their thoughts and get answers to their problems.
2. Teachers must teach students with up-to-date instructional strategies that help them to clear their doubts.
3. Promote students to participate in competition without the fear of failure.
4. Teachers must understand that every individual has different learning styles and their significant role in students' performance.
5. Successes, advancement, good behaviors of the students, and small steps in the direction of attaining goals must be strengthened and celebrated.
6. The teaching style must be interesting and motivating for the students.
7. Proper study materials must be provided to the learners so they prepare for the examination effectively.

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