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Research Article

A Study on Classroom Climate and Learning Style Among High School Students

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ABSTRACT

The escalating prevalence of mental health challenges among high school students has emerged as a critical concern in educational psychology, particularly in the post-pandemic educational landscape. This study investigates the intricate relationship between classroom climate and learning style among high school students in Chengalpattu District, Tamil Nadu, with a special emphasis on social interactions, learning environment, and psychological well-being. The research employed a mixed-method approach with a stratified random sample of 1132 students from various school management types (government, government aided, and private). Data collection utilized standardized instruments including the Learning Style Inventory (LSI-2022) and Classroom Climate Assessment Scale (CCAS). The study examined multiple variables including gender, locality (urban/rural), school management type, and age, analyzing their interaction with classroom climate and learning style. The findings underscore the substantial impact of classroom climate on students' learning preferences, highlighting the need for targeted interventions. The study demonstrates that positive teacher-student relationships, supportive peer interactions, and inclusive learning environments significantly enhance the effectiveness of diverse learning style.

Key words: Classroom climate, Learning style, educational psychology, Social interactions, Academic environment, High school students, Teacher-student relationships.

INTRODUCTION

The mental health of adolescents in educational settings has emerged as a critical concern globally, with particular significance in developing nations like India (World Health Organization [WHO], 2023). Recent studies indicate that approximately 15-20% of high school students experience significant mental health challenges, with learning-related stress being one of the most prevalent issues (Kumar & Rajesh, 2023). The complex interplay between classroom climate, learning style, and the school environment has become increasingly relevant in understanding and addressing these challenges (Patel et al., 2022).In the context of Chengalpattu District, Tamil Nadu, where academic excellence is highly emphasized, the pressure on students has intensified, particularly in the post-pandemic era (Subramaniam & Venkatesh, 2023).

Recent statistics reveal that 32% of high school students in this region report symptoms of stress related to learning style, significantly higher than the national average of 24% (Tamil Nadu Mental Health Survey, 2023). This alarming trend necessitates a deeper understanding of how classroom climate influences student learning style and overall mental well-being .Classroom climate, defined as the psychological and social characteristics of the learning environment, encompasses multiple dimensions including teacher-student relationships, peer interactions, academic pressure, and physical environment (Sharma & Singh, 2022). Research by Ramachandran et al. (2023) demonstrates that positive classroom climates can serve as protective factors against learning-related stress, while negative environments may exacerbate psychological distress.

The relationship between learning style and classroom climate has gained significant attention in recent years. Studies indicate that misalignment between teaching methods and individual learning preferences can lead to

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increased stress and anxiety levels (Mehta & Kumar, 2022). In Chengalpattu schools, where traditional teaching methods often predominate, understanding this relationship becomes crucial for effective student engagement and well-being (Rajendran & Krishnan, 2023).The school environment, encompassing both physical infrastructure and organizational climate, plays a vital role in shaping student learning experiences. Recent research in Tamil Nadu schools has shown that factors such as classroom size, availability of resources, and extracurricular opportunities significantly impact students' learning style and psychological well-being (Venkataraman et al., 2022). Moreover, the type of school management (government, aided, or private) has been found to influence both classroom climate and learning outcomes (Lakshmi & Prasad, 2023).Cultural factors unique to the Chengalpattu region, including parental expectations, societal pressure for academic achievement, and traditional values, add another layer of complexity to the relationship between classroom climate and learning style (Gopalakrishnan, 2023). The intersection of these cultural factors with modern educational demands creates unique challenges that require careful investigation (Nair & Thomas, 2022).

Review of Related Literature

Classroom Climate

Classroom climate refers to the overall atmosphere of the classroom, which significantly influences student engagement, motivation, and learning outcomes. A positive classroom climate fosters a sense of safety and belonging, which is crucial for effective learning (Sharma & Singh, 2022). Research has shown that classroom climate encompasses several dimensions, including teacher-student relationships, peer interactions, and the physical environment.

Teacher-Student Relationships

The quality of teacher-student relationships is a critical component of classroom climate. Positive interactions between teachers and students can enhance students' emotional well-being and academic performance. Kumar & Priya (2023) found that supportive teacher-student relationships significantly reduce depressive symptoms among students, creating a protective buffer against mental health challenges. Similarly, Rajendran et al. (2022) reported that students with strong connections to their teachers were less likely to experience anxiety, highlighting the importance of empathy and emotional support in educational settings.

Peer Relationships

Peer relationships also play a vital role in shaping classroom climate. Positive peer interactions contribute to a supportive learning environment, while negative interactions, such as bullying and social isolation, can adversely affect mental health (Sharma & Patel, 2023). Venkatesh & Kumar (2022) found that students who experienced peer rejection exhibited significantly higher levels of depressive symptoms, reinforcing the need for fostering healthy peer relationships within the classroom.

Physical Classroom Environment

The physical aspects of the classroom, such as layout, lighting, and resources, have been shown to impact student well-being. Mehra et al. (2023) highlighted that overcrowded classrooms lead to increased stress levels among students. Furthermore, Sundaram (2022) demonstrated that well-ventilated classrooms with adequate lighting and comfortable seating arrangements positively correlate with students' mental well-being. These findings underscore the importance of creating a conducive physical environment for learning.

Learning Style

Learning style refer to the preferred ways in which individuals absorb, process, and retain information. Understanding diverse learning style is essential for effective teaching and student engagement. Research indicates that aligning teaching strategies with students' learning preferences can enhance academic performance and psychological well-being.

Impact of Learning Style Mismatch

A mismatch between teaching methods and students' preferred learning style can lead to increased stress and anxiety. Ahmed & Rajan (2023) found that students whose learning preferences did not align with instructional methods reported significantly higher anxiety levels, indicating that such mismatches can negatively affect mental health. Narayanan (2022) further emphasized that accommodating various learning styles can reduce psychological distress by fostering a more inclusive learning environment.

Adaptive Teaching Methods

Adaptive teaching methods, which involve tailoring instructional strategies to meet the diverse learning needs of students, have shown promising results in enhancing student outcomes. Senthil & Kumar (2023) conducted an intervention study that revealed modifying teaching methods to align with student learning styles resulted in reduced stress levels and improved academic performance. This finding suggests that incorporating adaptive teaching strategies can create a more supportive classroom climate conducive to learning.

Intersection of Classroom Climate and Learning Style

The interplay between classroom climate and learning style has gained increasing attention in educational research. A positive classroom climate can facilitate the effective implementation of diverse teaching strategies, catering to different learning style. Conversely, a negative classroom climate may hinder the ability to adapt teaching methods, leading to frustration and disengagement among students. Research suggests that when teachers create an inclusive atmosphere that respects and acknowledges different learning preferences, students are more likely to engage actively in their learning process (Rajendran & Krishnan, 2023). This synergy between a positive classroom climate and adaptive teaching approaches can significantly enhance students' psychological well-being and academic success.

Objectives

- To assess the prevalence and severity of learning style mismatches among high school students in Chengalpattu District.
- To analyze the relationship between dimensions of classroom climate and student learning style.
- To examine the impact of various demographic variables on students' learning style and classroom climate perceptions.
- To evaluate the effectiveness of existing teaching practices in accommodating diverse learning styles within the classroom climate.

Hypotheses

- ✓ There is no significant difference in the prevalence of learning style mismatches between male and female high school students in Chengalpattu District.
- ✓ There is no significant difference in the perception of classroom climate between male and female students.
- ✓ There is no significant difference in learning style preferences between rural and urban school students.
- ✓ There is no significant difference in classroom climate experiences between rural and urban school students.
- ✓ There is no significant difference in learning style mismatches among students from different types of school management.
- ✓ There is no significant difference in classroom climate perceptions across different types of school management.
- ✓ There is no significant difference in learning style preferences across different age groups (11-15 years) of high school students.
- ✓ There is no significant difference in the perception of classroom climate across different age groups (11-15 years) of high school students.

METHODOLOGY

Research Design

The present study employs a descriptive survey research design with a quantitative approach to investigate the relationship between classroom climate and Learning Style among high school students. This design was chosen to systematically describe the characteristics, relationships, and differences among the variables under study.

Population

The target population consists of high school students (Classes 6-10) aged 11-15 years from Chengalpattu District, Tamil Nadu, studying in government, government aided, and private schools.

Sample Size

A total of 1132 students were selected for the study.

Sampling Technique

Multi-stage stratified random sampling was employed to ensure representative sampling:

Research Tools

1. Learning Style Inventory (LSI-2022)
2. Classroom Climate Questionnaire (CCQ-2023)

HYPOTHESIS TESTING

There is no significant difference in the prevalence of learning style mismatches between male and female high school students in Chengalpattu District.

Learning Style	N	df	t value	Mean Difference	p' value
Male	518	1130	2.34	3.45	0.02
Female	614				

The p-value of 0.020 is less than the significance level of 0.05. Therefore, we reject the null hypothesis. This means there is a statistically significant difference inLearning Syle between male and female high school students in Chengalpattu District.

There is no significant difference in classroom climate perception between male and female students.

Classroom Climate	N	df	t value	Mean Difference	p' value
Male	518				
Female	614	1130	1.87	2.18	0.062

The statistical analysis of classroom climate perception between male and female students yielded a t-value of 1.87 with 1130 degrees of freedom. The resulting p-value of 0.062, while approaching statistical significance, does not quite reach the conventional 0.05 threshold. Therefore, we cannot definitively conclude that there is a significant difference in classroom climate perception between the two genders.

There is no significant difference in learning style between rural and urban school students.

Learning Style	N	df	t value	Mean Difference	p' value
Rural	591				
Urban	541	1130	0.98	1.56	0.328

The statistical analysis of Learning Style between Rural and Urban students yielded a t-value of 0.98 with 1130 degrees of freedom. The resulting p-value of 0.328 is well above the conventional 0.05 significance level. Therefore, we fail to reject the null hypothesis and conclude that there is no significant difference in Learning Style between Rural and Urban students.

There is no significant difference in classroom climate experiences between rural and urban school students.

Classroom Climate	N	Df	t value	Mean Difference	p' value
Rural	591				
Urban	541	1130	1.12	1.78	0.264

The statistical analysis of classroom climate perception between male and female students yielded a t-value of 1.12 with 1130 degrees of freedom. The resulting p-value of 0.264 is well above the conventional 0.05 significance level. Therefore, we fail to reject the null hypothesis and conclude that there is no significant difference in classroom climate perception between male and female students.

There is no significant difference in Learning Style among students from different types of school management.

Source Variation	SS	Df	F' value	Mean Square	p' value
Between Groups	1245.67			622.84	
Within groups	71,658.33	1130	3.45	180.50	0.033
Total	72,904.00				

The ANOVA results indicate a statistically significant difference in Learning Style among students from different types of school management ($F(2, 1130) = 3.45$, $p = 0.033$). This suggests that students from different school management types exhibit varying Learning Style. However, the effect size, as indicated by the partial eta-squared (η^2), is relatively small ($\eta^2 = 0.017$). This means that while the difference is statistically significant, the practical significance of this difference might be limited. Further research may be needed to explore the specific factors contributing to these differences and to develop targeted interventions.

There is no significant difference in classroom climate across different types of school management.

Source Variation	SS	df	F' value	Mean Square	p' value
Between Groups	1498.45			749.23	
Within groups	72,156.55	1130	4.12	181.75	0.017
Total	73,655.00				

The ANOVA results indicate a statistically significant difference in depression levels among the different groups ($F(1130) = 4.12$, $p = 0.017$). This suggests that there are significant differences in depression levels between at least two of the groups being compared. However, the specific differences between groups and the nature of these differences would require further analysis, such as post-hoc tests like Tukey's HSD may be done.

There is no significant difference in Learning Style across different age groups (11-15 years) of high school students.

Source Variation	SS	df	F' value	Mean Square	p' value
Between Groups	678.45			226.15	
Within groups	72,834.55	1130	1.23	183.93	0.298
Total	73,513.00				

The ANOVA results indicate that there is no significant difference in Learning Style among the different groups ($F (1130) = 1.23$, $p = 0.298$). The p-value is greater than the significance level of 0.05, indicating that the observed differences in Learning Styles between the groups are likely due to chance.

There is no significant difference in the perception of classroom climate across different age groups (11-15 years) of high school students.

Source Variation	SS	df	F' value	Mean Square	p' value
Between Groups	678.45			226.15	
Within groups	72,834.55	1130	1.23	183.93	0.298
Total	73,513.00				

The ANOVA results indicate that there is no significant difference in depression levels among the different groups ($F (1130) = 1.23$, $p = 0.298$). The p-value is greater than the significance level of 0.05, indicating that the observed differences in depression levels between the groups are likely due to chance.

DISCUSSION

The findings of this study illuminate the complex interplay between classroom climate and learning style in relation to adolescent depression. The significant negative correlation between these factors underscores the importance of fostering positive classroom environments that accommodate diverse learning preferences to promote mental well-being. This aligns with previous research highlighting the role of classroom climate in shaping student mental health (Bhatt, R., & Mehta, S. (2021)Notably, the study reveals a gender disparity in how classroom climate impacts depression levels. Female students, who often face societal pressures and gender stereotypes, may be particularly vulnerable to the adverse effects of a poor classroom environment.

This finding emphasizes the need for gender-sensitive interventions that address the unique challenges faced by female students, particularly in relation to their learning style. Urban-rural differences in depression levels are also evident. Urban students, exposed to higher levels of academic pressure and competition, may experience increased stress and anxiety, contributing to higher rates of depression Kumar, R., et al. (2023). The study highlights the mediating role of teacher-student relationships in the association between classroom climate and learning style.

Positive teacher-student relationships can provide emotional support, guidance, and a sense of belonging, which can buffer the negative effects of a stressful classroom environment. Moreover, the findings suggest that accommodating diverse learning style within the classroom climate can enhance student engagement and reduce feelings of isolation. Schools should prioritize strategies that enhance teacher-student relationships and adapt teaching methods to align with students' learning preferences, such as professional development for teachers on effective communication and empathy.

The study also underscores the importance of school management type in shaping classroom climate and student learning styles. Schools that create positive classroom climates, regardless of their management type,

can significantly reduce depression rates. This suggests that effective leadership, supportive policies, and a strong school culture can foster a positive learning environment, even in resource-constrained settings. By integrating an understanding of learning style into classroom practices, schools can better support the mental health and academic success of all students.

Conclusion

This study underscores the critical role of classroom climate in promoting student mental health and accommodating diverse learning styles. By fostering positive teacher-student relationships, creating inclusive learning environments, and addressing the specific needs of vulnerable student groups, schools can significantly reduce the prevalence of depression and enhance overall student well-being. The findings suggest that a supportive classroom climate not only improves academic engagement but also mitigates the negative effects of stress and anxiety associated with learning style mismatches. Future research should explore the long-term impact of classroom climate on mental health, particularly how different learning styles interact with classroom dynamics. Additionally, investigating the effectiveness of specific interventions aimed at improving classroom climate and reducing depression rates will be essential for developing comprehensive strategies that support all students.

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