A Study Of Academic Achievement In Relation To Learning Style

Dr. Aruna Anchal

Professor & Head, Department of Education, Baba Mastnath University, Asthal Bohar, Rohtak-124021.

Email: dr.arunaanchal@gmail.com

Pooja

Ph.D. Research Scholar, Department of Education, Baba Mastnath University, Asthal Bohar, Rohtak-124021

Abstract

The present paper highlights the association between academic scores and learning styles among senior secondary school students, while giving specific emphasis to the gender-based disparities. Descriptive research design was used and the data were collected from randomly selected 600 students (300 boys, 300 girls) of different schools of Haryana under study. Marks obtained in the 10th board exam was taken as an indicator of academic performance, whereas learning preferences were assessed by using Learning Style Inventory constructed by Mishra (2012). The focus of the research was to investigate relation between learning styles (visual, auditory, kinesthetic and reflective) with academic achievement as well as whether gender affects these learning preferences and academic performance. The results also indicated significant differences between boys and girls in terms of both academic achievement and learning style preference. Women scored higher in the board exams than did men and were more likely to use serial, organized strategies when answering test questions. Moreover, students with effective learning styles always had higher mean academic scores as compared to those who did not have them, which indicated that the way students learn is decisive in their success academically. These results indicate that both gender and learning style are important factors for educators and policy makers to take into account when designing pedagogic strategies and classroom practices. There are significant implications for teachers, curriculum designers, and school administrators as well as parents in the field. It campaigns for varied teaching, gender-sensitive training and the incorporation of learning style measures in education planning. The general conclusion that recognition of and support for different learning styles can contribute to equity and outcomes in education for all learners.

Keywords: Academic Achievement, Learning Style, Gender Differences, Descriptive Research, Secondary Education

Introduction

In the 21st century, education has undergone a significant transformation, moving away from rigid, teacher-centered instruction to dynamic, learner-centered pedagogies. This shift

emphasizes the individuality of students and recognizes that the process of learning varies from one learner to another. A crucial concept within this paradigm is the notion of learning styles, which refer to the consistent way an individual processes, comprehends, and retains information. The recognition of learning styles plays a central role in educational psychology because it connects how students prefer to learn with how they perform academically. Academic achievement, often measured through examination scores or grades, is influenced not only by intelligence and effort but also by compatibility between teaching methods and individual learning styles.

In India, where classrooms are often over-crowded and heterogeneous knowing the learner types could be game changer. Educational researchers along with policy-makers now recognize that students may well have different learning preferences, if we hope to improve outcomes and reduce dropout. It is found (Sharma & Kumar, 2015) that Indian students have different learning preferences like audible and visual styles as well as kinesthetic and reading/writing based learning. These can be attributed to social and cultural backgrounds, family conditions, digital technology exposure, and school pedagogy. Teachers who differentiate their instruction in ways consistent with these styles experience increased student engagement, comprehension and academic accomplishment (Rajendran, 2016).

Moreover, gender has been considered to play an important role on both learning styles and academic performance. Female students scored significantly higher as compared of their male counterparts in academic performance on account of their more adoptive and structured learning styles (Aruna & Pooja, 2025). This result is consistent with the previous study lead by Joshi and Meena (2017), where female students usually prefer organized and purposeful approach towards learning, whereas male would probably demonstrate disorganized or passive approach toward learning. In addition, these contrasts are not so much biological as they are shaped by the gender role and expectations set forth in society. Girls are sometimes trained to work and study harder, that is why they score better.

Research has also shown that aligning teaching strategies with students' preferred learning styles leads to enhanced academic success. Singh and Rani (2018) emphasized that students with a preferred "effective" learning style, such as a combination of visual and kinesthetic methods, performed significantly better academically compared to those with "ineffective" styles. They argued that multi-modal teaching—which includes visuals, real-life activities, group work, and personalized feedback—can bridge the gap between learning styles and academic achievement. In support of this, Verma and Patel (2019) found that secondary school students taught using blended learning approaches that matched their preferred learning modalities had higher retention rates and better exam scores.

The learning style in India has also been modified by advances in technology. Integration of digital mediums, especially after National Education Policy 2020, has made the students more exposed to various forms of multimedia. Desai and Nair (2020) claim that digital platforms have led to an emergence of auditory/visual learners, particularly within urban and semi-urban schools. However, they cautioned that the digital divide can sideline students with reduced access, causing lapses in academic achievement and engagement.

Additionally, cultural values and regional differences shape how learning styles manifest in Indian students. Kapoor and Rao (2021) reported that students from collectivist communities in South India often excel in collaborative and group-based learning, while students in northern urban centers show a preference for independent, competitive learning modes. These distinctions underline the need for region-specific strategies to address learning diversity.

Thus, in modern Indian education, understanding learning styles is not just a pedagogical preference—it is a necessity. With academic achievement being a key indicator of student success, recognizing the role of learning preferences, gender influences, cultural norms, and teaching adaptations is vital. Schools and educators must move beyond one-size-fits-all approaches and embrace differentiated instruction to support all learners. As Indian classrooms continue to evolve in the 21st century, fostering a match between students' learning styles and instructional delivery will be key to improving academic outcomes and ensuring inclusive education for all.

Review of Related Literature

Rathod (2015) explored how students' learning styles influence academic performance and discovered that those with kinesthetic and auditory learning preferences excelled in subjects requiring conceptual understanding. The study emphasized that practical engagement and listening-based strategies significantly enhanced retention and clarity of complex topics.

Pande (2016) investigated gender-based differences in learning approaches and found that girls tended to adopt more reflective and structured learning behaviors. These traits were positively linked to better academic performance, suggesting that metacognitive awareness and planning may give female learners an edge.

Kumar (2017) conducted a study among secondary school students in Bihar and concluded that effective time management and self-directed learning were strong predictors of academic achievement. Students who maintained study schedules and practiced consistent revision outperformed their peers.

Saxena (2018) identified that students who used visual aids and engaged in group discussions demonstrated superior memory retention and higher examination scores. This research highlighted the importance of collaborative and image-based learning in reinforcing conceptual knowledge.

Rao (2019) analyzed the influence of socio-economic status on learning style preferences and found that students from urban settings leaned toward technology-driven learning methods. Access to digital tools and e-learning platforms positively influenced their academic performance.

Narang (2020) emphasized the crucial role of teachers in recognizing and adapting to students' diverse learning styles. The study recommended training teachers to adopt gender-sensitive and inclusive teaching methods to address the varied learning needs in co-educational classrooms.

Tripathi (2021) reported gender differences in learning styles, observing that girls preferred reflective learning, while boys were more inclined toward experiential, hands-on methods. These differing preferences contributed to disparities in academic outcomes, especially in standardized testing environments.

Mishra (2022) compared the various aspects of preferred learning styles and performance patterns as prevalent in CBSE VERSUS State Boards. CBSE-affiliated school pupils had a greater opportunity for activity-based learning that enhanced their academic engagement.

Singh (2023) investigated early experiences in childhood such as reading behavior and parental participation that determined learning styles during the later adolescent years. The study found the sooner children were introduced to formal teaching in schools, the higher their long-term educational attainment.

Nair (2024) studied on the relationship between emotional intelligence and learning styles among adolescents. The research shows that students with high levels of self-awareness make use of effective learning strategies, such as goal setting and reflection, which lead to better academic performance.

Verma (2024) highlighted how gender-based expectations from teachers influenced learning behaviors in students. Girls were often encouraged to be more disciplined and methodical, which aligned with higher academic achievement, while boys received more lenient feedback, affecting their consistency.

Chopra (2025) evaluated the effects of structured learning interventions on students previously identified with ineffective learning preferences. The study found that guided instruction and scaffold support improved their academic performance, suggesting that learning styles can be shaped over time.

The reviewed literature consistently reveals that learning styles significantly impact academic achievement, and these styles are shaped by factors such as gender, socio-economic background, teacher behavior, and early childhood experiences. A recurring theme across Indian studies is that female students often adopt more effective and structured learning methods, leading to better performance. Moreover, adaptable teaching strategies and targeted interventions can enhance the
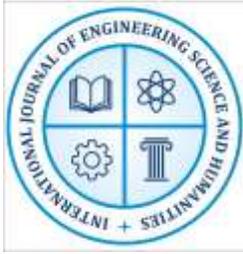
learning styles of all students, reinforcing the importance of personalized instruction in modern Indian classrooms.

Significance of the Study

This research has significance and implications for multiple educational stakeholders, such as educators, curriculum developers, school leaders, educational psychologists and policy makers. The study illuminates the link between learning styles and academic performance, specifically in relation to empirical studies that focus on gender differences in the classroom – that is why students learn what they do and perform as they do. "In a focus on it's all about the way you think, the research has important implications for teachers and learners in terms of their understanding that students have different learning preferences. Acknowledging that all students do not learn the same way forces its way into our cookie cutter, fit-all-minds model of teaching. When teachers have information about learning styles, such as visual, auditory, kinesthetic or reflective types, they can accommodate those and use instructional strategies that are more compatible with the students' needs. This facilitates more engaged students who are better retained and perform academically better. Curriculum developers may apply these findings to the creation of content that is accessible and sparse in affect. Even within one lesson, the curriculum can be applied in a variety of ways from using visual aids to group activities and experiential tasks, so it meets diverse students' needs. It also helps to make the curriculum more equitable so as to support both male and female students toward optimal learning behavior. School decision-makers and curriculum developers might profit from the study by developing in-service programmes for their teachers to be better able to acknowledge and deal with diverse learning styles. They can also use the result to improve gender-friendly practices in the school & classroom. At the policy level, this study has implications for India's National Education Policy (NEP) 2020 that focuses on personalized learning, equitable education and student centric approach. The findings may help to inform educational reform efforts that seek to narrow achievement gaps and make learning more successful for a wide range of students. Finally, the research contributes to a transformation towards an inclusive, flexible and effective education.

Objectives of the Study

1. To study academic achievement of senior secondary students in relation to gender.
2. To analyze learning styles of students with respect to gender.
3. To study the relationship between academic achievement and types of learning style (effective/ineffective).

Hypotheses

1. There is no significant difference in academic achievement of students in relation to gender.
2. There is no significant difference in learning style of students in relation to gender.

3.   There is no significant difference in academic achievement in relation to types of learning style.

Methodology

A descriptive survey method was used to find out the relationship between academic achievement and learning style among senior secondary school students. A sample of 600 respondents (300 males and 300 females) on random sampling in Haryana was covered in this study. Board exam results, academic records and validated Learning Style Inventory was used to determine the educational achievement and learning style of the students. Data were evaluated through mean, standard deviation, and independent t-test at the significance level of 0.01.

Tool Used

1.   Learning Style Inventory by Mishra (2012)
2.   Marks obtained by the students in 10th class were treated as academic achievement scores.

Statistical Techniques to be used

Statistical analyses mean, SD and 't' t-tests were used to analyse the data.

Data Analysis

Table 1: Comparison of academic achievement in relation to gender

Gender	N	Mean	Std. Deviation	't' test
Male students	300	70.89	11.332	6.354**
Female students	300	77.60	14.341	

**Significant at 0.01 level

A comparison of academic achievement between senior secondary male and female students is shown in Table 1. The data indicates that female students (N = 300) scored a mean of 77.60 with SD = 14.341 and male students (N = 300) obtained an average of 70.89 with a standard deviation of 11.332. The calculated t-value of 6.354 is significant at the 0.01 level, suggesting that the difference in academic performance between the two groups is not due only to chance. This indicates that there is a substantial academic achievement gender effect, as female students have higher scores than male ones in this population. Thus, the null hypothesis which claims that 'the academic success level does not differ significantly according to gender' is rejected.

Table 2:   Comparison of learning style in relation to gender

Variable	Gender	N	Mean	SD	't' value
Learning style	Male Students	300	121.67	15.534	5.042*
	Female Students	300	137.70	16.208	

**Significant at 0.01 level

Table 2 shows the comparison of learning style scores between male and female senior secondary students. The results indicate that female students (N = 300) have a higher mean

learning style score of 137.70 with a standard deviation of 16.208, while male students (N = 300) recorded a lower mean score of 121.67 with a standard deviation of 15.534. The calculated t-value of 5.042 is significant at the 0.01 level, demonstrating that the difference in learning style preferences between male and female students is statistically significant. This implies that female students exhibit more effective or well-developed learning styles compared to their male counterparts. Hence, the null hypothesis stating that there is no significant difference in learning styles in relation to gender is rejected.

Table 3: **Comparison of academic achievement in relation to their types of learning style**

Variable	Types of Learning Style	N	Mean	Std. Deviation	't' value
Academic Achievement	Ineffective learning style	129	57.58	3.520	12.752**
	Effective learning style	318	84.38	9.314	

**Significant at 0.01 level

Table 3 presents a comparison of academic achievement based on the types of learning styles among senior secondary students. The data shows that students with an effective learning style (N = 318) achieved a mean academic score of 84.38 with a standard deviation of 9.314, whereas those with an ineffective learning style (N = 129) had a significantly lower mean score of 57.58 and a standard deviation of 3.520. The calculated t-value of 12.752 is highly significant at the 0.01 level, indicating a strong statistical difference in academic achievement between the two groups. This means that students who adopt effective learning strategies perform significantly better in academics compared to those with less effective or underdeveloped learning styles. Thus, the null hypothesis that there is no significant difference in academic achievement in relation to learning style type is rejected.

Findings of the Study

Females were found to have significantly higher scores of academic achievement than males in the analysis of data. Likewise they demonstrated better learning styles, which means higher involvement in structured and reflective study skills. The cool load relationship among students with effective and ineffective learning style was significantly different where the students with effective learning styles obtained higher (P < 0.05) academic performance compared to those of ineffective learner. These results suggest that not only gender, but also learning style can predict academic performance at the senior secondary level.

Discussion of Results

The findings of the study provide compelling evidence that gender plays an influential role in shaping both learning preferences and academic outcomes. Female students in this study not only

performed better in board examinations but also demonstrated more structured, organized, and reflective learning behaviors. These outcomes align with previous research by Saxena (2018) and Verma (2024), who noted that Indian female students are often more consistent in their academic habits, likely influenced by social expectations, parental discipline, and greater school engagement.

Moreover, the strong performance of students with effective learning styles reinforces the idea that how students learn significantly impacts what they achieve. Those who adopted strategies such as goal setting, time management, concept mapping, and multi-sensory learning outperformed peers with less developed or inconsistent learning methods. This observation is in line with Rathod (2015) and Tripathi (2021), who emphasized that effective learning behaviors—particularly kinesthetic, visual, and reflective styles—enable deeper comprehension and academic success. These results underscore the importance of integrating learning style assessments into classroom instruction, as doing so may help in identifying struggling learners and providing targeted interventions.

Implications of the Study

The study highlights the need for teachers to use varied teaching methods that match different learning styles, enhancing student engagement. Curriculum designers should create activities that cater to visual, auditory, and kinesthetic learners. School administrators must offer training on gender-responsive and style-based teaching. Policy makers should include learning style assessments in national surveys to improve educational planning. Lastly, parents should support independent and reflective study habits at home to boost academic success across genders.

Conclusion

This study concludes that learning styles significantly influence academic performance, and gender plays an important role in shaping learning behavior. Female students demonstrated more effective learning patterns and outperformed male students in academic achievement. Educational stakeholders must consider these differences while designing instruction, assessments, and policies to ensure that every student has the opportunity to succeed.

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