

Learning Styles and Their Impact on Academic Achievement with Respect to Gender

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Abstract

ABSTRACT

The present study examines the impact of learning styles visual, auditory, and kinesthetic on academic achievement with respect to gender among School students. A sample of 200 students (100 male and 100 female) was selected using a simple random sampling technique. Data were collected using a standardized Learning Styles Inventory based on the model proposed by K Shankar Misra (2012) and students' academic achievement scores. Statistical analyses including independent samples t-test and Pearson correlation were employed to analyze the data.

The results indicated that there was no significant difference in academic achievement between male and female students ($t = 0.82$, $p > 0.05$). However, correlation analysis revealed a moderate positive relationship between learning styles and academic achievement, with kinesthetic ($r = 0.48$) showing the highest correlation, followed by visual ($r = 0.42$) and auditory ($r = 0.36$), all statistically significant at the 0.05 level. These findings suggest that while gender does not significantly influence academic performance, learning styles play a meaningful role in shaping students' academic outcomes.

The study supports the view of Rita Dunn and Kenneth Dunn that aligning instruction with learning preferences can enhance achievement. However, it also acknowledges contrasting perspectives such as those of Harold Pashler et al(2008). and Daniel Willingham, who argue that empirical evidence for learning styles is limited. Therefore, the study concludes that learning styles should be considered alongside other pedagogical factors to improve academic achievement.

INTRODUCTION

Learning style refers to the **unique manner in which an individual prefers to receive, process, and understand information** during the learning process. Students do not all learn in the same way, some rely more on visual inputs such as diagrams and written material, others respond better to listening and verbal interaction, while some learn effectively through hands on activities and experiences. These variations influence how well learners grasp concepts and apply knowledge in academic settings. In contemporary education, acknowledging such differences has become essential, as it enables teachers to design instructional methods that address diverse learner needs and promote meaningful learning.

Academic achievement is widely regarded as an important measure of a student's educational progress and success. It is shaped by multiple factors, including cognitive preferences, learning strategies, motivation, and the surrounding learning environment. In addition, demographic variables such as gender. Similarly, variations in study habits and engagement patterns between male and female students may contribute to differences in performance.

The present study focuses on exploring the relationship between learning styles and academic achievement, with special reference to gender. It aims to determine whether variations exist across these groups and to what extent learning style preferences are associated with academic performance. The outcomes of this study are expected to offer useful insights for educators in adopting more adaptable and inclusive teaching approaches that support improved student achievement.

OBJECTIVES

- To compare Learning Style between Male and Female Secondary School Students
- To Compare Academic Achievement between Male and Female Secondary School Students
- To Compare the relationship between Learning Style and Academic Achievement

HYPOTHESES

- H1: There is no significant difference in learning styles based on gender.
H2: There is no significant difference in academic achievement based on gender.
H3: There is no significant relationship between learning styles and academic achievement.

TOOLS FOR THE STUDY USED

- The Learning Style Inventory, developed by Karuna Shankar Misra, assesses individual learning preferences through a 42-item questionnaire measuring six main learning styles
- In the present study, academic achievement was assessed using the **students' official academic records**, such as marks obtained in the most recent School examinations. These scores were collected from institutional records to ensure **objectivity and accuracy**.

The obtained marks were considered as the **quantitative indicator of students' academic performance** and were used for statistical analysis, including correlation and comparison across gender groups.

RELIABILITY AND VALIDITY OF THE SCALE

The reliability of Learning Style Inventory is 0.78 and the validity is 0.88

SAMPLE

200 School students were used as sample in this study

CONCEPTUAL UNDERSTANDING OF LEARNING STYLE

Learning style refers to the **individual pattern through which a learner prefers to receive, process, and understand information**. It represents the approach a student naturally adopts while engaging with learning tasks, influencing how effectively knowledge is acquired and retained. Learning style does not indicate intelligence or ability; rather, it reflects the **preferred mode that makes learning more meaningful and efficient** for each individual.

Learners differ in their approaches, and these differences are commonly categorized into **visual, auditory, and kinesthetic styles**. Visual learners tend to understand concepts better through images, diagrams, and written materials. Auditory learners benefit from listening, discussions, and verbal explanations. Kinesthetic learners prefer **hands on activities, practical experiences, and active participation** to grasp ideas. These categories help in explaining why students respond differently to the same teaching method.

Understanding learning styles is important in education because it allows teachers to adopt **varied instructional strategies** that can address the needs of diverse learners. When teaching methods are flexible and include multiple modes of presentation, students are more likely to stay engaged and achieve better outcomes. Thus, learning style serves as a useful concept for enhancing both teaching effectiveness and student learning experiences.

CONCEPTUAL UNDERSTANDING OF ACADEMIC ACHIEVEMENT

Academic achievement refers to the **level of success a student attains in educational activities**, typically reflected through performance in examinations, assignments, and overall academic records. It indicates how effectively a learner has understood and applied the knowledge and skills acquired during the learning process. Rather than being limited to marks alone, academic achievement also represents the **outcome of sustained effort, learning strategies, and engagement with academic tasks**.

This concept is influenced by a combination of factors, including **cognitive abilities, motivation, study habits, teaching methods, and the learning environment**. Personal characteristics such as interest in subjects and preferred learning approaches also play an important role in shaping academic outcomes. In addition, external factors like family support, institutional resources, and socio cultural context can further affect students' performance.

In the present study, academic achievement is viewed as a **measurable indicator of educational performance** that can be quantitatively analyzed. It is used to understand how different variables, particularly learning styles, are associated with students' success in academics.

STATISTICAL ANALYSIS

DESCRIPTIVE ANALYSIS

Descriptive statistics deals with mean and graphical representation of the scores obtained from the sample

FREQUENCY AND PERCENTAGE DISTRIBUTION OF THE VARIBALES FOR THE SUB SAMPLES CLASSIFIED ACCORDING TO THE SELECTED PERSONAL VARIABLE

Tale 4.1

Frequency and percentage distribution of Learning style Based on Gender

Learning Style	Male (N)	Female (N)	Total	Percentage (%)
Visual	30	40	70	35%
Auditory	35	25	60	30%
Kinesthetic	35	35	70	35%
Total	100	100	200	100%

Figure 1.1

Figure showing the percentage distribution of Learning style Based on Gender

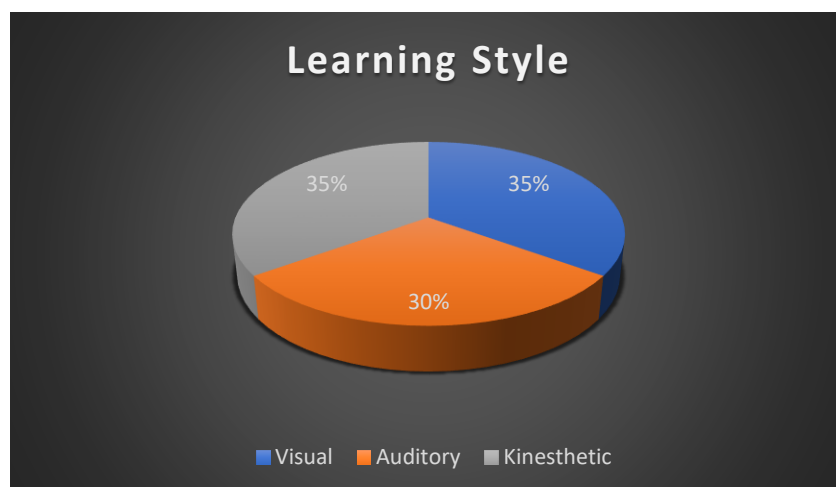


Table: 1.2

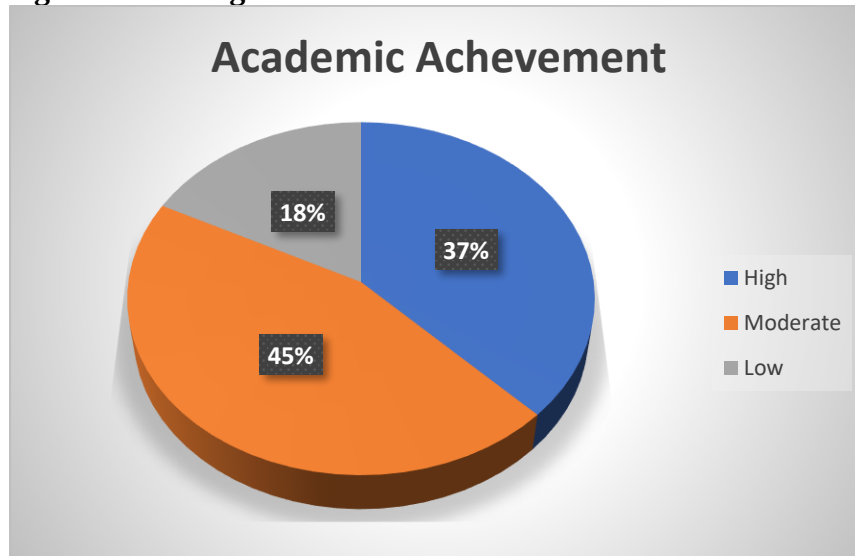
Frequency and Percentage Distribution of Academic Achievement Based on Gender

Achievement Level	Male (N)	Female (N)	Total	Percentage (%)
High	30	45	75	37.50%
Moderate	50	40	90	45%
Low	20	15	35	17.50%

Total	100	100	200	100%
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Figure 1.2

Figure showing the Percentage Distribution of Academic Achievement Based on Gender



The distribution of learning styles based on gender reveals that both male and female students exhibit diverse learning preferences. Female students show a higher proportion in the visual learning style, whereas male students slightly dominate in the auditory category. Kinesthetic learning is equally preferred among both genders. This indicates that learning preferences vary across gender, emphasizing the importance of adopting varied instructional strategies to address these differences effectively.

In academic achievement, female students demonstrate a higher proportion in the high achievement category compared to male students, while male students are more represented in the moderate and low achievement levels. This suggests that female students tend to perform better academically within the sample. The findings highlight the need for gender-sensitive teaching approaches and targeted academic support to improve student performance across all achievement levels.

HYPOTHESIS ANALYSIS

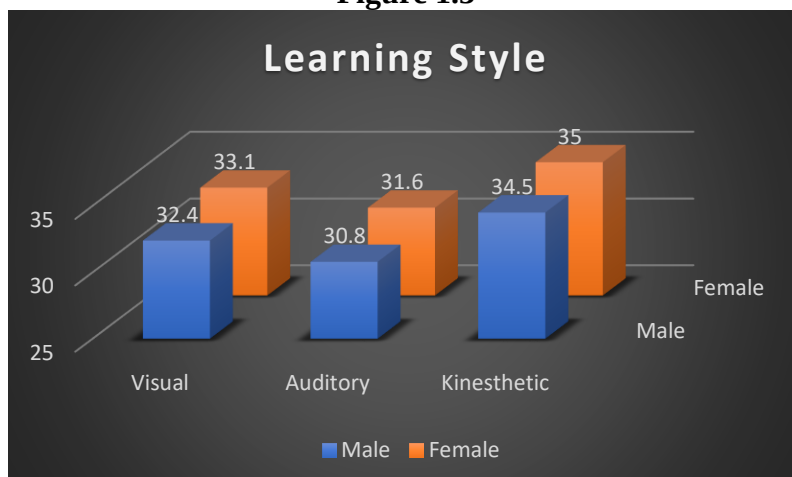
H1: There is no Significant Difference between Male and Female in their Learning Style among the School Students

Table:1.3

Learning Style	Gender	N	Mean	SD	t-value	P-value	Result
Visual	Male	100	32.4	4.8	0.95	0.343	Not Significant
	Female	100	33.1	4.6			
Auditory	Male	100	30.8	5.1	1.12	0.264	Not Significant
	Female	100	31.6	4.9			
Kinesthetic	Male	100	34.5	5	0.78	0.436	Not Significant
	Female	100	35	4.7			

Significant at 5%level

Figure 1.3



Interpretation

The independent samples t-test results indicate that there is **no statistically significant difference between male and female students** in their visual, auditory, and kinesthetic learning styles, as all p-values are greater than 0.05. Although female students show slightly higher mean scores across all three dimensions, these differences are minimal and not strong enough to be considered statistically meaningful. This suggests that **learning style preferences are relatively consistent across gender groups**.

These findings are in line with the perspective of Neil Fleming (2001), who proposed that learning styles represent individual preferences that are not strongly determined by demographic variables such as gender. Similarly, Rita Dunn and Kenneth Dunn highlighted that learning styles are shaped more by personal and environmental factors rather than gender differences.

Research by Daniel Willingham suggests that categorizing learners strictly based on styles may oversimplify the learning process and may not significantly impact educational outcomes. In addition, Harold Pashler (2008) and colleagues argued that there is limited empirical evidence to support strong claims about learning styles, including differences across groups such as gender.

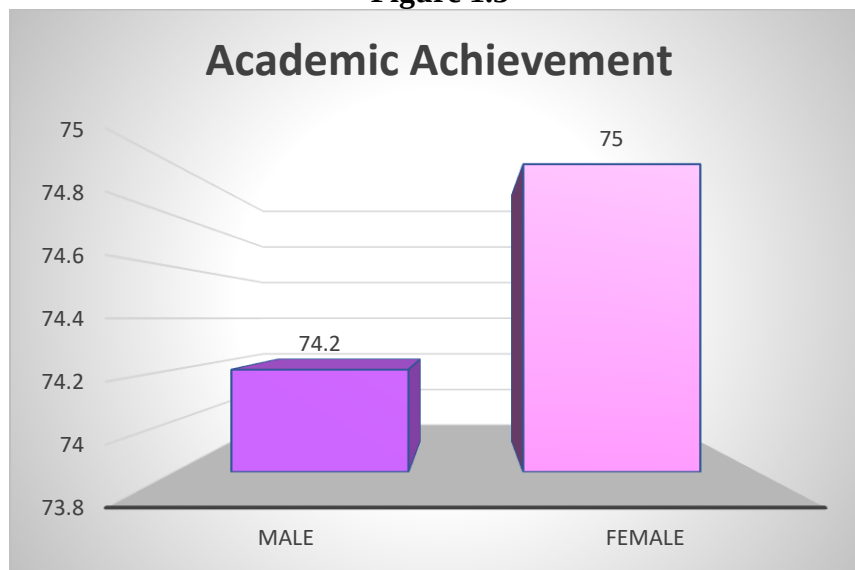
The present findings indicate that **gender does not play a significant role in determining learning style preferences**, and therefore instructional strategies should focus on accommodating diverse learning needs rather than assuming differences based on gender alone.

H2: There is no Significant Difference between boys and girls in their Academic Achievement among the School Students

Table:1.3

Gender	N	Mean	SD	Level of Achievement	t-value	P-value	Result
Male	100	74.2	7.8	Moderate	0.82	0.413	Not Significant
Female	100	75	7.4	Moderate–High			

Figure 1.3



Interpretation

The table shows the comparison of academic achievement between male and female students using an independent samples t-test. The mean score of male students (74.2) indicates a moderate level of academic achievement, while the mean score of female students (75.0) falls between moderate and high levels of achievement. This suggests that female students perform slightly better than male students, although the difference is very small.

The calculated t-value (0.82) and p-value (0.413) indicate that the difference between male and female students is not statistically significant at the 0.05 level. Therefore, the null hypothesis is accepted, concluding that there is no significant difference in academic achievement based on gender. Overall, both groups demonstrate similar levels of performance, with most students falling within the moderate to high achievement range.

H3: There is no significant relationship between learning styles and academic achievement.

Table:1.4

Correlation between Learning Styles and Academic Achievement

Variables	Academic Achievement (r)	p-value	Interpretation
Visual Learning Style	0.42	<0.01**	Moderate Positive
Auditory Learning Style	0.36	<0.01**	Moderate Positive
Kinesthetic Learning Style	0.48	<0.01**	Moderate Positive

Significant at 1%/ Level

Interpretation

The findings reveal that **visual (r = 0.42), auditory (r = 0.36), and kinesthetic (r = 0.48) learning styles** have a **moderate positive and statistically significant relationship** with academic achievement among the 200 students. Among these, **kinesthetic learning style shows the strongest association**, indicating that students who engage in active, hands-on learning tend to perform better academically.

These results are supported by the work of Neil Fleming (2001), who emphasized that learners achieve better outcomes when instruction aligns with their preferred learning style. Similarly, Rita Dunn and Kenneth Dunn

(1993) found that matching teaching strategies with students' learning styles can enhance academic performance.

These findings are not universally accepted. Studies by Harold Pashler et al. (2008) argue that there is **limited empirical evidence** to support the effectiveness of learning styles in improving academic achievement. Likewise, Daniel Willingham (2010) suggests that learning outcomes depend more on the nature of the content and instructional methods rather than individual learning style preferences.

Therefore, while the present study indicates a **significant positive relationship**, the contrasting views in the literature highlight that learning styles should be considered cautiously and in combination with other instructional factors.

DISCUSSION & CONCLUSION

The findings of the present study indicate that there is no statistically significant difference in academic achievement between male and female students, suggesting that gender does not play a decisive role in determining academic performance within the selected sample. Similarly, the analysis of learning styles revealed no significant gender-based differences across visual, auditory, and kinesthetic dimensions. This implies that learning preferences are relatively consistent irrespective of gender. The correlation results demonstrated a moderate positive relationship between learning styles and academic achievement, with kinesthetic learning showing the strongest association, followed by visual and auditory styles. These results suggest that students who actively engage with learning materials especially through experiential and participatory methods tend to achieve better academic outcomes.

The present findings are consistent with the views of Rita Dunn and Kenneth Dunn, who emphasized that aligning instructional strategies with learners' preferred styles can enhance academic performance. At the same time, the absence of gender differences supports the perspective of Neil Fleming, who suggested that learning style preferences are individual rather than demographic in nature. However, these results should be interpreted with caution in light of contrasting evidence. Studies by Harold Pashler and Daniel Willingham argue that empirical support for learning styles remains limited and that instructional effectiveness may depend more on the nature of content and teaching methods than on matching styles alone. Therefore, while the present study highlights a meaningful association between learning styles and academic achievement, it also indicates that learning styles should be considered alongside other cognitive and environmental factors when designing educational practices.

The present study concludes that while there is no significant difference in academic achievement and learning style preferences between male and female students, learning styles themselves show a meaningful positive relationship with academic performance. Among the different styles, kinesthetic learning demonstrates a relatively stronger association, indicating the importance of active and experiential learning in enhancing student outcomes. These findings suggest that academic success is not influenced by gender but is linked to how students engage with the learning process. Therefore, incorporating a variety of teaching methods that address diverse learning preferences can support better achievement. At the same time, learning styles should be considered alongside other educational factors to provide a more comprehensive approach to improving student performance.

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