



## EduInspire-An International E-Journal

An International Peer Reviewed and Referred Journal (www.ctegujarat.org)  
 Council for Teacher Education Foundation (CTEF, Gujarat Chapter)  
 Patron: Prof. R. G. Kothari  
 Chief Editor: Prof. Jignesh B. Patel  
 Email:- Mo. 9429429550 ctefeduinspire@gmail.com

### A Study on Learning Styles of Secondary School Students and Their Academic Achievement

**Dr. Rajesh Rathod**

Indian Institute of Teacher Education, Gandhinagar, Gujarat, BHARAT  
[rajeshr@iite.ac.in](mailto:rajeshr@iite.ac.in)

**Ms. Danuja Dharmarajan**

Indian Institute of Teacher Education, Gandhinagar, Gujarat, BHARAT

#### Abstract

Students' academic performance is significantly influenced by their learning preferences. A person can optimize his learning ability and employ his preferred learning methods to acquire as much knowledge as possible by being aware of his learning style. Knowing the learning preferences of each student will enable the teacher to choose instructional tactics that will optimize the learner's potential. The present study aimed to identify the learning styles of secondary school students of Gandhinagar and also to study the relation between learning style and academic achievement of secondary school students with reference to gender and types of school. Quantitative research method was employed. The data was collected with the help of questionnaire to assess their learning style. Findings show that Kinesthetic learning was consistently identified as the most popular learning style, it was also seen that students who prefer this technique typically perform academically better. The research shows that there was a minimal overall link learning styles and academic achievement. In addition, it was found that there was lack of apparent distinction in the learning styles of male and female students emphasizing the significance of gender- neutral methods to education. It was also found that secondary school students in government, grant-in-aid and private schools have slightly different learning styles, although having Kinesthetic learning being major learning style. The study concludes by highlighting how important it is to recognize and accommodate a variety of learning styles, especially Kinesthetic learning, in order to support secondary school students' academic achievement. Teachers may establish more inclusive and productive learning environments that meet the needs of every student and eventually improve academic results by acknowledging and celebrating these diversities.

**Keywords:** Learning style, Academic Achievement, Kinesthetic, Quantitative etc.

#### Introduction

Every learner learns differently, according to the concept of "learning style." A student's preferred method of learning, remembering, and applying the knowledge they are learning is known as their learning style. Understanding learning styles is crucial for achieving success in anything one does. Children's songs, for instance, often have hand and body motions and

movements that go along with them so that kids may do the activity while singing. (Kinesthetic learners), children who learn best by doing—can learn the song's components while engaging in physical movement. Knowing each student's learning style is crucial for teachers, and it is equally necessary for students to comprehend their own learning style in order for learning to be successful. Aristotle, who believed that "each child possessed specific talents and skills," first identified the concept of a "learning style" in 334 BC (Reiff, 1992). Since then, the idea of learning styles has changed. Aristotle's realization that kids differed led to a wave of researchers developing their own theories on learning styles. Lev Vygotsky, one of these scholars, started formulating his own learning theories in 1978. Because social interactions are the foundation of a child's growth, according to Vygotsky, social learning comes before a child's development. He also held the opinion that a child's surroundings had an impact on their way of thinking and what they think about. Theorist Jean Piaget, on the other hand, thought that a kid must first develop before learning. Piaget thought that all civilizations share the same stages of cognitive development. Piaget, in contrast to Vygotsky, thought that a child's growth is impacted by his or her own autonomous experiences, which allow the kid to create his or her own knowledge. After several theories on how children learn, what they should learn, and what motivates them to learn in particular ways were created, theories on the various learning styles that children possess were then produced. (Haswell, 2017)

Learning styles tells us how an individual approaches the knowledge obtained and the way they learn. As we know that there are different types of students having different learning abilities, they also have a different pattern of learning which we say as the learning style of an individual. It refers to the way an individual comprehends, assimilate and organize the knowledge obtained. The learner can also be using the visual, auditory, read/write or Kinesthetic style of learning.

It is important for the teachers to know about the different types of learning styles of their students so that it would help them plan better lessons to match the level of students and also give them the most appropriate tasks to suit the particular learner. For an effective teaching learning process, the knowledge of the learning style is important. In this study, the identification of different learning styles is done.

### Origin of the Study

The diverse ways that people see information, the rate at which they comprehend it, and their preferred focus on particular information categories are all indicated by their learning styles. The idea that "having an understanding of the students' preferences for learning style would provide teachers with effective learning strategies to use" is brought up once more. "Students who share a learning style that is synchronized with the teacher remember information longer and are more optimistic about learning," (Fatt, 2000). The reason why pupils frequently struggle in school is that they are unable to deal with a variety of scenarios. The problem with the current educational system is that pupils sometimes find it difficult to handle a variety of scenarios. Additionally, teachers are encouraging problem-solving abilities and utilizing the many learning styles in their class. Students can be equipped for the best of society and to handle real-life issues in this way. As a result, in order to achieve better results, a teacher

must be aware of his students' learning preferences. A skilled teacher would simply examine the situations and comprehend the student's learning preferences in order to address any issues that may occur during class. As a result, it is advised that teachers possess knowledge and comprehension of the learning styles that will result in academic success. Additionally, a student's learning style and the teacher's teaching method might improve the student's academic success and level of satisfaction. According to studies, "the alignment of teaching and learning styles positively affects achievement and satisfaction." The assumption that students will learn more and like the class experience and setting in which they can use their preferred learning styles has been proven by learning style specialists. Here, it can be shown that students respond better to teaching-learning methods that match their preferred learning styles. Collaborating with students and incorporating different learning methods into the classroom setting can also increase the value of these methods for everyone. (Rohtesh, 2021). The present study focuses on studying the different types of learning styles of the secondary school students so that the teachers can plan and deliver the lessons accordingly. The students will have more interest and curiosity in gaining more knowledge when the method of instruction matches their learning preference, therefore performing well in the academics. Thus, identification of the learning styles of the students is important so this study was done. The researcher made an effort to identify and isolate certain characteristics of the learners i.e. different learning styles, in order to characterize the distinctive processes of learning.

### **Uniqueness of the Present study**

After studying and reviewing numerous research studies, the researcher noted that there was a comparatively small number of studies examining learning styles among secondary school students. The researcher encountered a notable gap in the literature, particularly the absence of studies focusing solely on the learning styles of secondary school students. Consequently, the researcher made the decision to embark on a study to address this gap.

The primary objective of the study was to identify the learning styles of secondary school students across government, grant-in-aid, and private schools in Gandhinagar. The researcher recognized that understanding how pupils learn and absorb information is a crucial issue in education. By delving into the learning styles of secondary school students, the study aimed to contribute to the body of knowledge in this area.

The study emphasized the importance of educators gaining a comprehensive understanding of learners' preferred learning styles. Such insights can enable educators to tailor instructional methods and strategies to better meet the diverse needs of students. This focus on individualized approaches to learning has the potential to enhance the effectiveness of teaching practices and create more engaging learning environments for secondary school students in Gandhinagar.

### **Title of the Problem**

The title of the research problem was "A study on learning styles of secondary school students and their academic achievement"

### Objectives of the Study

Every research is built around a set of objectives. Without objectives, one cannot come up with a work strategy. The present study was conducted to study the different learning styles among the students. The study was undertaken with the following objectives:

1. To identify the learning styles of secondary school students.
2. To study the relation of learning style on the academic achievement of secondary school students.
3. To study the learning styles of male and female students.
4. To study the learning styles of government, grant-in-aid and private secondary school students.

### Hypothesis of the Study

For the present study, the researcher has framed the null hypothesis as mentioned below:

- H01 There is no significant relation between the learning style and academic achievement of secondary school students.
- H02 There is no significant difference in the learning styles of male and female secondary school students.
- H03 There is no significant difference in the learning styles of government, grant-in-aid and private secondary school students.

### Variables of the Study

The traits, qualities, or contributing factors that are the subject of a research endeavour are referred to as variables. To put it another way, variables are the things that are subject to change or variation and are employed to gather, process, or analyse data for research.

The following table represents the different types of variables considered under the study.

**Table 1: List of variables in the study**

| Sr. no. | Types of Variables   | Variable               |
|---------|----------------------|------------------------|
| 1       | Independent variable | Learning styles        |
| 2       | Dependent variable   | Academic achievement   |
| 3       | Moderate variable    | Gender, type of school |

### Type of Research

The Present research was Quantitative Research. Quantitative research involves the collection and analysis of numerical data to understand phenomena, relationships, or patterns. It emphasizes objective measurement and statistical analysis to draw conclusions. Researchers used various methods such as surveys, experiments, and statistical analyses to quantify variables and test hypotheses. This approach enables researchers to generalize findings to larger populations and make predictions with a degree of certainty.

### Method of Research

The researcher used Survey method for the study. Descriptive survey method is a research technique used to gather information about the characteristics, attitudes, behaviours, or opinions of a population. In this method, researchers design questionnaires or surveys to collect data from a representative sample of the population of interest. The surveys typically consist of structured questions that aim to describe the current state of affairs or to explore the

prevalence of certain attitudes or behaviours within the population. Descriptive surveys provide valuable insights into the demographics, preferences, or opinions of the target group, allowing researchers to summarize and analyse the collected data quantitatively.

### Population of the Study

For the present study, the population consisted of students of secondary schools of government, grant-in-aid and private schools.

### Sample and Sampling Technique

In the present study, the researcher has taken the secondary school students of standard 9th of government, grant-in-aid and private type of school from Gandhinagar city. The researcher has used random sampling technique. Total 400 students were selected by the researcher. Details of sample given as under.

**Table 2: Sample of the study**

| Type of School | Male | Female | Total |
|----------------|------|--------|-------|
| Government     | 80   | 55     | 135   |
| Grant In Aid   | 69   | 53     | 122   |
| Private        | 76   | 67     | 143   |
| Total          | 225  | 175    | 400   |

### Research Tool

In the present study, the researcher has used questionnaire as a tool.

The final draft of the tool was constructed after the necessary changes. The questionnaire consisted of 40 items. The modifications were done in the items based on the difficulty in the understanding level of the students. Some statements were reframed for the better understanding of the students. The final improved version of the tool was prepared for the administration.

### Procedure of Data Collection

For the collection of data, the researcher firstly took permission from the schools to conduct the study. After getting the permission, the researcher collected the data of the male and female students in government, grant-in-aid and private schools with the help of the tool prepared wherein the students filled the data according to their learning preferences. The data of the previous semester mark sheet was also collected in order to compare the academic achievement of the student in accordance to their learning style.

### Data Analysis Technique

The method of analysis was selected by taking into consideration the objectives of the study, population and the sampling design. Descriptive statistical analysis was used to analyse the collected data.

The researcher used the following analysis technique to test the hypothesis: 'r', 't test' and 'F test'.

**Results of the study**

Results of study are mentioned below:

1. Researcher identified the different learning styles as Visual, Auditory, Reading/writing and Kinesthetic among the secondary school students.
2. Relation of Learning style and Academic Achievement of Secondary School Students.

**Table 3: Correlation between learning style and academic achievement**

| Variables                              | N   | r value | Significance       |
|----------------------------------------|-----|---------|--------------------|
| Learning Style<br>Academic Achievement | 400 | 0.185   | N.S. at 0.05 level |

The result in the above table 3 indicates that the r value between learning styles and academic achievement of secondary school students is calculated to be approximately 0.185. Hence, the null hypothesis is not rejected.

Thus, there is no significant relation between the learning style and academic achievement of secondary school students. Based on value, 0.185 we can say that there is very weak correlation between learning styles and academic achievement of secondary school students.

### 3. Learning styles of Male and Female Students

**Table 4: Comparison between learning styles of male and female students**

| Gender | Mean  | S.D.  | Variance | t value | Significance level |
|--------|-------|-------|----------|---------|--------------------|
| Male   | 14.76 | 2.622 | 6.87     | 10.06   | N.S. at 0.05 level |
| Female | 14.77 | 2.505 | 6.27     |         |                    |

From the above table 4, it is evident that mean of male students is 14.76 and female students is 14.77 which is almost same. SD of male students is 2.622 and female students is 2.505 which indicates almost similar variance between male and female students. The calculated t value was tested at 0.05 significance level. The t value at 0.05 is 1.965. The calculated t value is 0.066. The  $t(\text{cal}) < t(0.05)$ , it shows that the null hypothesis is not rejected as the t value obtained was 0.066 which is lower at the level of significance.

Thus, there is no significant difference in the learning styles of male and female secondary school students. It means that there is no major difference in the learning styles of male and female secondary school students.

### 4. Learning Styles of Government, Grant-in-Aid and Private Secondary School Students.

**Table 5: Descriptive Statistics of learning styles of Government, Grant-in-Aid and Private secondary school students**

| Sr. No. | Type of school      | Mean Score |
|---------|---------------------|------------|
| 1       | Government school   | 14.95      |
| 2       | Grant-in-Aid school | 15.17      |
| 3       | Private school      | 14.24      |

From the above table 5, it is seen that the mean values of Government, Grant-in-Aid and Private schools are 14.95, 15.17 and 14.24 respectively. It is seen that there is difference in the values of the mean score of the schools. Further, it is also seen from the data interpreted

before that the learning style possessed by government, grant-in-aid and private schools was found to be Kinesthetic, which was the dominant learning style.

**Table 6: Analysis of variance (ANOVA) on the scores of learning styles of Government, Grant-in-aid and Private schools**

| Source of Variation | df  | SS      | MS    | F value | Significance level        |
|---------------------|-----|---------|-------|---------|---------------------------|
| Between groups      | 2   | 63.82   | 31.91 |         |                           |
| Within groups       | 397 | 2569.55 | 6.47  | 4.93    | Significant at 0.01 level |
| Total               | 399 | 2633.37 |       |         |                           |

From the above table 6, the variance between the groups and within the groups are calculated. The calculated F value is tested at significance level. The table F value at 0.05 is 3.01 and at 0.01 is 4.65. The calculated F value is seen as 4.930. The  $F(\text{cal}) > F(0.01)$  value shows that the null hypothesis is rejected.

Thus, there is significant difference in the learning styles of government, grant-in-aid and private secondary school students of Gandhinagar city. It would indicate that there are significant differences in learning styles among the students from different types of schools in Gandhinagar city.

### Findings of Research

Findings of Research are mentioned below:

1. Researcher identified the different learning styles as Visual, Auditory, Reading/writing and Kinesthetic among the secondary school students.
2. There is significant relation between the learning style and academic achievement of secondary school students. It was found that there is very weak correlation between learning styles and academic achievement of secondary school students.
3. There is no significant difference in the learning styles of male and female secondary school students. It means that the male and female students of secondary schools are possessing similar type of learning style.
4. There is significant difference in the learning styles of government, grant-in-aid and private secondary school students of Gandhinagar city. It would indicate that there are significant differences in learning styles among the students from different types of schools in Gandhinagar city.

### Discussion of Findings

The findings of the research provide important light on the academic performance and learning preferences of Gandhinagar city's secondary school students. In government, grant-in-aid, and private schools alike, Kinesthetic learning was consistently identified as the most popular learning style. This indicates that students, irrespective of their gender or the type of school, have a significant preference for experiential, hands-on learning. In addition, there seems to be a notable relationship between a student's Kinesthetic learning style and academic success; students who prefer this technique typically perform better academically. This emphasises how crucial it is to modify teaching strategies to meet the needs of Kinesthetic learners because it appears to be linked to improved academic performance.

It's interesting to note that, despite the popularity of Kinesthetic learning, research shows a minimal overall link between learning styles and academic achievement, indicating that academic success may also be influenced by factors other than learning styles. Additionally, secondary school pupils in government, grant-in-aid, and private schools have slightly different learning styles, although kinesthetic learning still predominates in all of these settings. This highlights the necessity for a thorough approach to curriculum design and instructional strategies that can both acknowledge the universality of kinesthetic learning across various educational contexts and effectively accommodate students' varied learning preferences.

The lack of apparent distinction in the learning styles of male and female students further emphasises the significance of gender-neutral methods to education. This calls into question long-held beliefs about gender and preferred methods of learning, highlighting the necessity for educators to embrace inclusive methods that cater to all students, regardless of gender.

The study concludes by highlighting how important it is to recognize and accommodate a variety of learning styles, especially Kinesthetic learning, in order to support secondary school students' academic success. Teachers may establish more inclusive and productive learning environments that meet the needs of every student and eventually improve academic results by acknowledging and celebrating these diversities.

### Implications of the study

The implications of the present study would be applicable at a largest scale by incorporating various innovative approaches in the teaching learning process which in turn will enhance the learning outcomes leading to better understanding among the students.

1. Understanding common learning styles can empower teachers to adapt their methods, fostering greater student engagement and comprehension.
2. Modifying lessons to students' strengths and weaknesses can optimize learning outcomes, promoting individualized growth. Customized lessons based on learning styles can optimize academic outcomes.
3. Schools can optimize resource allocation by catering to prevalent learning styles, enhancing the quality of education through targeted materials and activities.
4. Educators can refine teaching strategies through professional development, creating inclusive classrooms that accommodate diverse learning styles.
5. Parents can support their child's education by aligning home activities with their learning style, reinforcing classroom lessons effectively.
6. Embracing diverse learning experiences in curriculum design promotes comprehensive learning and accommodates varied learning styles.
7. Personalized support services can assist students with specific learning styles, ensuring they receive necessary academic assistance and guidance.

### Conclusion

In conclusion, this study examined secondary school students' learning preferences and the academic outcomes that complemented them. Important insights were obtained by using descriptive statistics, such as mean computations and percentage analyses. The results showed that the Kinesthetic learning style was the most popular choice among the students

inquired and that it was significantly correlated with high academic accomplishment. On the other hand, even though visual, auditory, and reading/writing learning styles were also common, their corresponding academic achievement rates varied, suggesting that they were not all equally effective in the classroom.

These findings highlight how crucial it is for educational settings to identify and accommodate a variety of learning styles in order to maximize student achievement. The study also emphasizes how personalized teaching strategies can improve student learning outcomes and advance equal access to education for all secondary school students. Further research could explore the efficacy of specific teaching methodologies aligned with various learning styles to inform targeted interventions and instructional strategies. In the end, establishing inclusive and successful educational methods can be greatly aided by comprehending and addressing the nuances of learning styles.

## References

- Best, J. W., Jha, A. K., & Kahn, J. V. (2017). *Research in Education*, Tenth Edition, Kindle Edition.
- Bhat, H. N. (2014). The Concept of Academic Achievements. *International Journal of Education and Science Research Review*.
- Chakrabarti, A. K. (2017). Learning style in relation to course experience aptitude in chemistry and learning outcome. <https://shodhganga.inflibnet.ac.in/>
- Chandra, S. (2017). Study Of Learning Styles and Process of Development Of Professional Skills Among Students Of Professional Courses Of Open Universities. Retrieved from <https://shodhganga.inflibnet.ac.in/>
- D, K. (2014). Emotional intelligence, goal orientation and Learning styles of IX standard pupils in relation to their academic achievement in Tamil. <https://shodhganga.inflibnet.ac.in/>
- Devasahayam selvakumar, S. (2003). Learning styles intelligence and learning environment in mathematics as determinants of achievement in mathematics. <https://shodhganga.inflibnet.ac.in/>
- Poon Teng Fatt, J. (2000). Understanding the learning styles of students: implications for educators. *International Journal of Sociology and Social Policy*, 20(11/12), 31-45. <https://doi.org/10.1108/01443330010789269>
- Haswell, Joanna, (2017). A Close Look at Learning Styles. Honors Senior Capstone Projects. 23. [https://scholarworks.merrimack.edu/honors\\_capstones/23](https://scholarworks.merrimack.edu/honors_capstones/23)
- Moayyeri, H. (2015). The Impact of Undergraduate Students' Learning Preferences (VARK Model) on Their Language Achievement. *Journal of Language Teaching and Research*, Vol. 6, No. 1.
- Norasmah Othman, M. H. (2010). Different Perspectives of Learning Styles from VARK Model. *Procedia Social and Behavioural Sciences* 7(C).
- Oluremi, F. D. (2015). Learning Styles among College Students. *International Journal for Cross-Disciplinary Subjects in Education (IJCDSE)*, Special Issue Volume 5 Issue 4.

- Oluremi, F. D. (2015). Retrieved from <https://infonomics-society.org/wp-content/uploads/ijcdse/published-papers/special-issue-volume-5-2015/Learning-Styles-among-College-Students.pdf>
- Reiff, J. C. (1992). Learning styles. What research says to the teacher, 7. Washington, DC: National Education Association.
- Rohtash. (2021). Academic achievement and learning styles of Secondary school students in relation to Extraversion introversion divergent thinking and locus of control. <https://shodhganga.inflibnet.ac.in/>.
- SANGEETA. (2018). A study of learning and decision-making styles of senior secondary Students in relation to emotional competency. <https://shodhganga.inflibnet.ac.in/>.
- Singh, R. (2020). A study of achievement motivation Among secondary school students in relation to their learning style School environment and self-concept. <https://shodhganga.inflibnet.ac.in/>.
- T, S. (2016). Learning Difficulties Of Higher Secondary Students In Biological Science In Relation To Learning Styles And Learning Interest. <https://shodhganga.inflibnet.ac.in/>.
- Tessema, M. G. (2019). The relationship of university students' engagement with teaching style learning style and academic achievement in Ethiopia. <https://shodhganga.inflibnet.ac.in/>.
- Zainl, N. N. (2019). Vark Learning Styles Towards Academic Performance Among Students of Private University in Selangor. International Journal of Modern Trends in Social

