

# Learning Styles Of Secondary School Students

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## Abstract

Everyone is a lifelong learner. A person's learning style differs from person to person and is known as a person's learning style (LS). Perceptual modalities of learning style point out that learning happens through the senses. Accordingly, there are six types of learning styles. Knowing about the dominant or significant learning style would help the students understand their core areas of learning. Secondly, it would help the teachers and administration plan, organize, and execute learning situations and assessments. In this context, the researcher studies the major, minor, and negligible learning styles of secondary students and the influence of the demographic profile of the learner on learning styles. The researcher followed the descriptive survey method for the study, and a sample of 2901 secondary school students was considered. The study's findings point out that visual and group learning styles are significant learning style preferences, and auditory, kinesthetic, tactile, and individual learning styles are minor learning style preferences. Moreover, the student's learning style preferences are influenced by the gender of the student, type of management of the school, medium of instruction or language of learning, type of school residence, and locality of the school.

**KEYWORDS:** Perceptual modalities, learning style, assessments, secondary school

## Introduction

The way of learning is known as their “learning style”. It is a “person's preferred method of information intake, processing, comprehension, and retention”. One or more learning styles may be present in a student. This entirely depends upon the way student absorb the information and assimilate it into his or her previous knowledge. Learning styles are categorized as individual, group, visual, kinesthetic, auditory, tactile and learning styles in accordance with the perceptual modalities of learning. This refers to the use of sensory organs which are primary for the learning.

“Learning styles”, according to Reid (1995), “represent unique, ingrained, and

preferred ways for people to take in, process, and retain new knowledge and skills. Every learner has a unique personality when it comes to the learning process”.

He mentioned that “Perceptual learning styles are categorised into auditory (listening to lectures and tapes), visual (reading and studying diagrams), kinesthetic (involving movement and physical activity), tactile (using one's hands), group (learning with others or in a group), and individual learning (studying alone)”.

## Studies on learning styles

The students’ learning preferences have a significant impact on their overall success. If the learner is aware of their preferred

method of learning, additional benefits will come into their academic life. "Knowing their individual learning preferences would enable the students to assess their own strengths and limitations (Gilakjani, 2012)". This would help the learner to focus on weak areas and develop strong areas of learning modalities.

Studies demonstrate that "learning styles vary according to gender" (Mallick, Krishna and Mukhopadhyay, 2016). But Singh, Govil, and Rani (2015) & Soundariya, Deepika, and Kalaiselven (2017) found conflicting results. Additionally, according to Singh, Govil, and Rani (2015), "the father's educational background, religion, or area of residence had no bearing on the youngsters' preferred methods of learning". But they discovered that "student's learning methods are influenced by their mother's educational background".

Kinjari and Gopal (2020) state that "students' socio-economic background, kind of institution, and place of residence all impact their learning styles". These studies demonstrate that students learning styles are influenced by demographic factors, including gender, instruction medium, school type, etc.

The study conducted by Reid (1987), Rossi-le (1995), Sharifah Azizah and Wan Zalina (1995), and Stebbins (1993) on preferred types of learning styles revealed that the pupils prefer kinesthetic and tactile learning styles but do not choose group learning styles. Melton (1990) found that "multiple learning styles, including kinesthetic, tactile, and individual learning styles, were the students' preferred learning styles". Mustaffa (2005) found that "kinesthetic, tactile, and group styles were perceived as the major learning style preferences". Riazi and Mansoorian (2008) found that major learning styles are auditory, visual, tactile, and kinesthetic learning styles. They chose group and individual learning styles as their minor ones. Alsafi (2010) revealed that, in general, "kinesthetic, auditory, and tactile

learning styles were preferred by the participants while they disfavoured using visual, group, and individual learning styles".

According to Ong et al. (2006), kinesthetic learning was their dominating learning method, whereas auditory learning was students' least favoured learning mode. After surveying secondary school pupils in Kedah, Malaysia, Hari Haran and Ismail (2003) discovered that students do not exhibit excellent learning styles. They perceive kinesthetic and group learning as minor ones; and remaining learning styles are negative ones. Adi Afzal Ahmed (2011) states that students have no major or minor learning style preference.

### **Significance of the Study**

Students learning styles influence the understudies' academic achievement. Some students have excellent learning styles, while others have poor learning styles for various reasons, including family foundations, financial conditions, family size, and guardians' training. Distinct differences in children's learning styles are also significant. Taking styles may differ from child to child as high standards and low achievers emerge. Furthermore, learning styles differ from school to school, executive to executive, and area to region.

Education is crucial for transferring knowledge in today's contemporary cultural context. It has made it mandatory for guardians and the legislature to educate all of our nation's youngsters. No youngster deserves to lose the benefit of concentration in school in this situation. To effectively seek information, all school participants, from beginning to conclusion, require specific approaches and practice them. These learning styles have a significant role in determining their level of performance. This passing grade determines their future career. Our understudies' desires and desires are typically suggested by the learning aptitudes adopted by the understudies.

Accepting responsibility for one's own learning is critical as part of the learning process. The learner must seek solutions to his or her challenges and investigate his or her learning style. He or she should understand what has to be learned and how to solve the situation. This comprehension alters the learners' perceptions of learning new topics. Understanding one's learning style is significant for various reasons.

Because everyone is unique, learning styles can differ. Second, teachers can effectively employ various teaching techniques according to learners' learning styles. Third, if teachers truly recognise the learning styles of the group, they can handle various issues in education and communication. Teachers can influence the teaching-learning process in a desirable direction by understanding their student's learning styles, psychological features, and motivational differences.

Although learning styles play an essential role in academic achievement, few studies have identified a link between academic achievement and learning styles (Nasir, 2006; Abidin et al., 2011). As a result, the researcher attempted to study secondary school students in this area. The study's findings are expected to aid in developing guidance and counselling services for school pupils to improve their academic performance through an appropriate learning style.

### Objectives of the study

- To find out the preferences of students' learning styles and classify them
- To understand the learning styles of students based on demographic variables

Gender : Male/ Female  
 Class : IX Class/ X Class  
 Type of Management : Government/ Private

Board : State / CBSE  
 Medium of instruction : Telugu/ English  
 Type of school : Residential/ Non –Residential  
 Locality : Rural/ Urban/ Tribal  
 Category : O.C/ B.C/ S.C/ S.T/

The following hypotheses have been formulated and they are tested one by one.

### Hypotheses

1. Gender of students makes no significant difference in their learning style preferences.
2. There is no significant difference in student learning style preferences based on class.
3. School administration type makes no significant difference in students' learning style preferences.
4. Board type makes no significant difference in students' learning style preferences.
5. The medium of instruction makes no significant difference in students' learning style preferences.
6. There is no significant difference in students' learning style preferences based on school type.
7. Location makes no significant difference in students' learning style preferences.
8. Category of students makes no significant difference in their learning style preferences.

### Methodology

The descriptive survey method was used by the researcher. The study took into account six learning styles. The researcher employed a self-prepared questionnaire to determine the students' preferred learning styles. It consists of 36 yes, no, and cannot say statements on a three-point scale. The study's population consisted of pupils in grades nine and ten from the Andhra Pradesh districts of Visakhapatnam, Anakapalli, and Alluri Sita Ramaraju (ASR).

Stratified random sampling was used as the sampling technique. The current study considered a sample size of 2901.

### Data Analysis:

#### Objective-1

- To find out the preferences of students' learning styles and classify them

Table 1 displays the sample's mean scores for each learning style preference. Six statements on a three-point scale comprised each learning type. The mean scores classified learning style preferences as major, minor, and least significant. The criteria used for this:

**Table 1: Categorization of learning styles**

Obtained scores	Learning styles
14.5-18.0	Major learning style
9.0-14.4	Minor learning style
0-8.9	Negligible learning style

The mean scores of sample were found out for all six learning styles which are given in table 2.

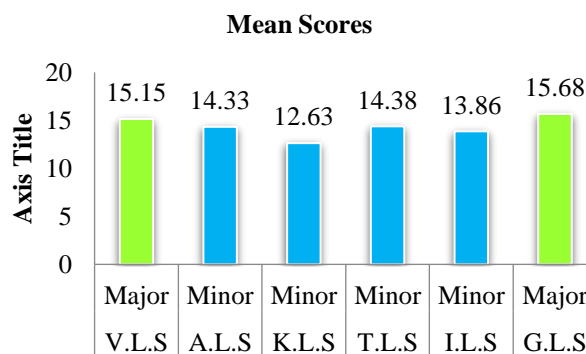
**Table 2: Mean –L.S.P. of students**

Learning style preference	Mean scores	Classification
Visual Learning Style	15.15	Major
Auditory Learning Style	14.33	Minor
Kinesthetic Learning Style	12.63	Minor
Tactile Learning Style	14.38	Minor
Individual Learning Style	13.86	Minor

**Table 3 Variable -Mean, -SD-N -t values -learning styles of students**

Variable	Group	N	M	SD	SE <sub>D</sub>	t-value	Hypotheses
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Group Style	Learning	15.68	Major
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### 1. Bar diagram of classification of the learning style preferences

Table 2 shows that the sample of students uses Visual and Group learning styles as Major learning style preferences; Auditory, Kinesthetic, Tactile and Individual learning styles as Minor learning style preference. These results partially coincide with the results found by Hasuturi (2022) as it was found in the study that “major learning styles auditory, kinesthetic and group learning styles”. Nur Naenah (2022) shows that “group, kinesthetic and tactile learning styles are dominant learning styles of students”. This point out that group learning style is dominant learning style in most of the students.

### Objective-2

- To understand the learning styles of students based on demographic variables.

### Hypotheses 1 to 6

The table 3 shows the distribution of the sample and the related scores. The researcher has used statistical techniques like mean (M), standard deviation (SD), and t-value.

Gender	Male	1381	84.95	6.83	0.266	7.67**	Null hypotheses is rejected
	Female	1520	86.99	7.45			
Class	IX	1351	86.08	7.41	0.269	0.40 <sup>NS</sup>	Null hypotheses is not rejected
	X	1550	85.97	7.08			
Type of Management	Government	2406	86.17	7.34	0.357	2.49*	Null hypotheses is rejected
	Private	495	85.28	6.63			
Board	State	2162	86.10	7.50	0.308	1.08 <sup>NS</sup>	Null hypotheses is not rejected
	CBSE	739	85.77	6.37			
Medium of instruction	Telugu	334	83.00	8.08	0.416	8.20**	Null hypotheses is rejected
	English	2567	86.41	7.02			
Type of school	Residential	1640	86.48	7.32	0.27	3.90**	Null hypotheses is rejected
	Non Residential	1261	85.42	7.07			

\*\* Significant at 0.01 level \* significant at 0.05 level NS- Not Significant

### Interpretation:

The table 3 indicates that the calculated t-value (7.67) is greater than the table value of 2.58. Therefore, it is significant at 0.01 level. Hence, the null hypothesis is rejected. Furthermore, female students' mean learning style scores are 86.99, significantly higher than male students' mean learning style scores of 84.95. Female students were found to have a higher use combination of learning styles than male students.

The t-value for the variable class from Table 3 is 0.40, which is not significant. There is no significant difference in the learning scores of the students in classes IX and X. As a result, the null hypothesis is not rejected. Students in both classes were found to have similar learning patterns.

Table 3 shows that the t-value for the variable type of management is 2.49, which is significant at the 0.05 level with  $df = 2899$ . This implies that children in public and private

schools have pretty different learning styles. As a result, the null hypothesis is rejected. Furthermore, the average learning style score of public school students is 86.17, much higher than the average learning style score of private school students, 85.28. Pupils in public schools were shown to use a greater variety of learning styles than students in private schools.

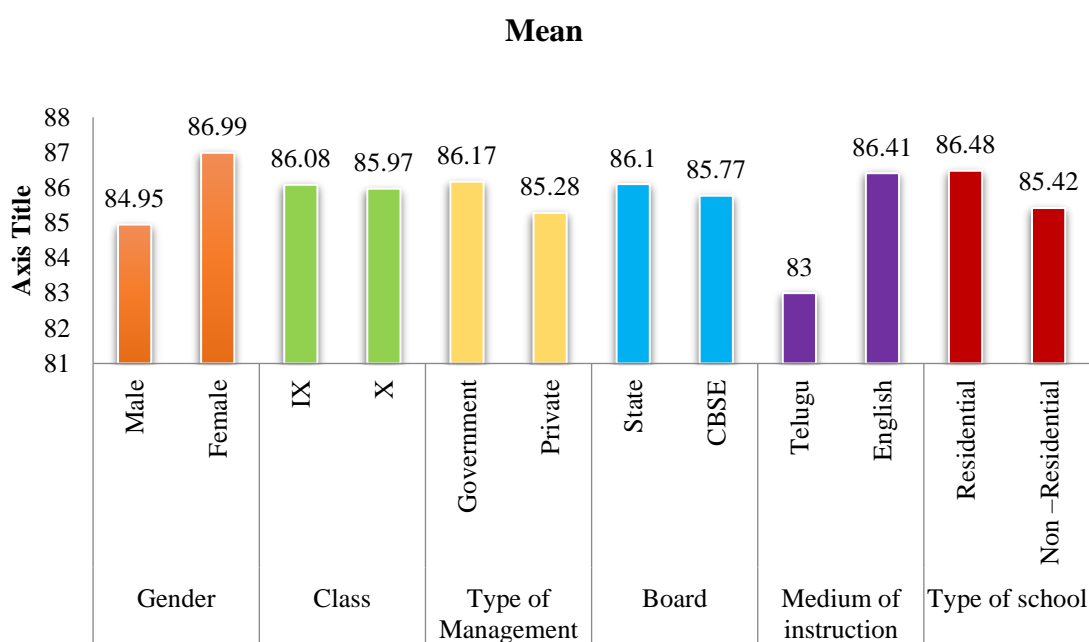
The t-value for the variable board is 1.08, which is not significant. This means there is no statistically significant difference in the mean scores of students studying in State Board School and CBSE Board School. As a result, the null hypothesis cannot be rejected. Both board school pupils used similar learning approaches.

The t-value for the variable medium of instruction is 8.20, which is significant at the 0.01 level with  $df = 2899$ . This suggests that Telugu and English medium school kids have different learning habits. The null hypothesis is rejected. Furthermore, the mean learning style scores of Telugu medium school students are 83.00, significantly lower than the mean

learning style scores of English medium school students of 86.41. Students in English medium schools were found to have a significantly greater variety of learning styles than students in Telugu medium schools.

Above table shows with  $df = 2899$ , the  $t$ -value is 8.20, which is significant at the 0.01 level. These results show that residential and

non-residential school students have different learning styles. As a result, the null hypothesis is rejected. Furthermore, residential school students' average learning style scores are 86.48, significantly higher than non-residential school students' average learning style scores of 85.42. Residential school students have more diverse learning styles than non-residential students.



**2. The bar diagram shows the information on Gender-Class- Type of school management– Board-Medium of Instruction- Type of School-Mean**

### Hyptheses-7

To compare the mean score of learning styles of rural, urban and tribal locale students, the data

was analysed with the help of ANOVA and the results are given in Table 4.

**Table 4- ANOVA -locality - learning styles of students**

Source of Variance	df	Sum of squares	Mean squares	F	P – value
Locality of school	2	1343.80	671.898	12.95**	0.00
Error	2899	150332.09	51.874		
Corrected Total	2901	151675.88			

\*\* Significant at 0.01 level

Table 4 shows that the F value is 12.95, which is significant at the 0.01 level with  $df = (2, 2899)$ . This demonstrates a considerable difference in the mean learning style scores

**Table 5 -locality -Mean, -t value -learning L.S of Students**

Local ity	Me an	N	t-value		p-value	
			Urb an	Tri bal	Urb an	Tri bal
Rural	86.06	998	2.43*	2.68*	0.02	0.01
Urba n	86.84	952	-	5.14**	-	0.00
Triba l	85.16	951	-	-	-	-

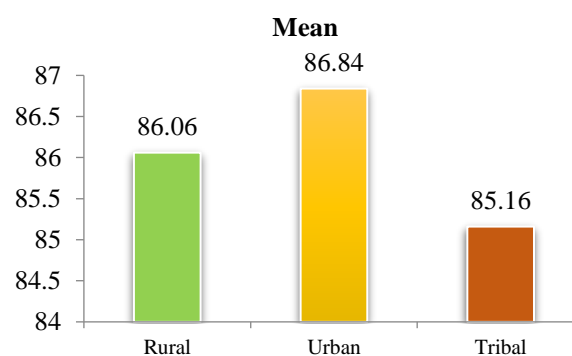
\*\* Significant at 0.01 level \* significant at 0.05 level

Table 5 shows that the t-value for learning styles of rural and urban school children is 2.43, which is significant at the 0.05 level with  $df = 1948$ . the mean scores of learning styles varied significantly. Students from both rural and urban locations are enrolled. Furthermore, the mean learning style scores of rural school students were 86.06, significantly lower than the mean scores of urban school students, 86.84. It is possible to say that urban students use various learning approaches more than rural pupils.

Similarly, the t-value for learning styles of rural and tribal school children is 2.68, which is significant at the 0.05 level with  $df = 1947$ . This shows that the mean scores differ significantly. Students learning styles in rural and tribal locations Furthermore, rural school students' mean learning style scores were 86.06, which was considerably higher than tribal school students' mean scores of 85.16. Rural school pupils, as opposed to tribal school students, use a variety of learning approaches.

among students from rural, urban, and tribal locations. As a result, the null hypotheses is rejected. The data was then examined using the t-test, and the findings are shown in Table 5.

Above table shows that the t-value for students learning styles in urban and tribal schools is 5.14, which is significant at the 0.01 level with  $df = 1901$ . This suggests that the mean scores of learning styles varied significantly—students from urban and tribal communities. Furthermore, the mean scores of urban school students for learning styles were 86.84, considerably higher than the mean scores of tribal school students of 85.16. It is possible to say that urban school students use a variety of learning strategies more than tribal school pupils.



### 3. The bar diagram shows the information on Area-Mean

#### Hypotheses-8

To compare the mean score of learning styles of students of OC, BC, SC and ST categories, the data was analysed with the help of ANOVA and the results are given in Table 6.

**Table 6 -ANOVA - Category- learning styles of students**

Source of Variance	df	Sum of squares	Mean squares	F	p value
Category	3	3142.70	1047.566	20.43	0.73
Error	2898	148533.18	51.271	NS	

Total	290	151675.			3. There is no statistically significant difference in the mean learning style scores between students in classes IX and X.
	1	88			

NS- Not Significant

Table 6 shows that the F value is 20.43, which is not statistically significant at the 0.05 level. There is no significant difference in the mean scores of students from the OC, BC, SC, and ST groups. As a result, the null hypothesis that there cannot be discarded.

### Findings:

1. Visual and Group learning styles as Major learning style preferences and Auditory, Kinesthetic, Tactile and Individual learning styles as Minor learning style preference.

The study contradicts with Reid (1987), Melton (1990) Stebbins (1993), Rossi-le (1995) and Sharifah Azizah and Wan Zalina (1995), Alsafi (2010) as they said "group learning style is the least preferred learning style among students". It is support with Mustaffa (2005) as they found out that "group learning style is major learning style". Some results partially supportive and partially contradictory like Riazzi and Mansoorian (2008) and Hariharan and Ismail (2003) as it were found "visual learning style is major and group learning style is minor".

2. The learning styles of male and female students differ significantly. Female students' average learning style score is 86.99, significantly higher than male students' average learning style score of 84.95.

The result is in contradiction with Naik and Kumar (2018), Khan and Khan (2022), Manjula (2022), Toppo and Topno (2022) and Sultana & Kundu (2022) as they found that "gender does not influence learning styles of students". The supportive results were found by Bayrak (2012) and Hamidon (2015) as they stated that "gender influences learning style preferences".

Contradictory results were found by Bayarak (2012) as they stated that "class of study influence learning style preferences of students", and supporting results were found by Babu and Kalaiarasan (2020).

4. The learning styles of kids in public and private schools differ significantly. The mean learning style scores of public school students were 86.17, significantly higher than the mean scores of private school students, 85.28.

Identical results were found by Khanal (2016) and contradictory results by Manjula (2022) and Toppo & Topno (2022) as they stated that "private school students found to have high use of learning styles than government school students".

5. There is no difference between the mean scores of learning styles of students attending State Board School and CBSE Board School.

6. The learning styles of Telugu and English medium school kids differ significantly. Telugu medium school students' mean learning style score is 83.00, which is significantly lower than the mean learning style score of English medium school students, 86.41.

7. The learning styles of residential and non-residential school children differ significantly. Residential school students' mean learning style scores are 86.48, significantly higher than non-residential school students' mean scores of 85.42.

Toppo and Topno (2022) found a contradictory result as they stated that "non-residential school students use a higher combination of learning styles than residential school students".

8. The mean scores of learning styles of students from rural, urban, and tribal areas differ significantly. For example, the mean scores of learning styles of rural school students



were 86.06, much lower than those of urban school students, who averaged 86.84. The mean learning style score of urban school students is 86.84, significantly higher than the tribal school students' mean score of 85.16.

Therefore, it can be concluded that urban school students use a combination of learning styles more than rural and tribal area students. Also, rural school students use combination learning styles than tribal area students. Contradictory results were found by Najar (2016) and Toppo & Topno (2022) as they stated that "tribal school students use a combination of learning styles than urban school students".

9. There was no significant difference in mean learning style scores between students from the OC, BC, SC, and ST groups.

The results are instead of the findings of Kinjari and Gopal (2020) as they stated that "caste does not influence the learning style preferences of the students".

### **Educational Implications:**

1. Visual learners can sketch diagrams or scientific processes, view videos, highlight, circle, underline, and make a list.
2. Listening students can use word association, record lectures, watch videos, participate in group discussions, and take notes.
3. Kinesthetic students can study in small groups and visit the lab, take classes, make field trips, and visit museums.
4. Students can boost their academic performance and reinforce weak areas of study.
5. Teachers can identify their favorite learning style, frequently becoming the prevailing learning style.
6. Teachers can learn more about their student's learning styles.

7. Parents should be educated on the numerous methods available to help their children learn.

### **Conclusion:**

The learning styles of students have a substantial impact on their overall achievement. Additional benefits will accrue to the learner's academic career if they know their favoured learning method. Students can measure their strengths and weaknesses by understanding their particular learning preferences. The student concentrates on weak learning areas and improves vital learning approaches. Furthermore, students' learning style preferences are influenced by their gender, the type of school management, the medium of instruction or language of learning, the type of school residence, and the school's location.

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