

# Role of Gender in Shaping Learning Style Preferences and Academic Outcomes of Secondary Students- A Study from Andhra Pradesh, India

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**Citation:** Sumitha. P et.al (2024), Role of Gender in Shaping Learning Style Preferences and Academic Outcomes of Secondary Students- A Study from Andhra Pradesh, India, Educational Administration: Theory and Practice, 30(3), 2638-2645

Doi: 10.53555/kuey.v30i3.7353

## ARTICLE INFO

## ABSTRACT

Everyone is a continuous learner. The way that we learn differ from person to person which is known as learning style (LS) of a person. Perceptual modalities of learning style points out that learning happens through senses. Accordingly there are six types of learning styles. They are visual, auditory, tactile, kinaesthetic, individual and group learning styles. The researcher studies the major, minor and negligible learning styles of secondary students and influence of gender of the learner on learning styles. The researcher also focus upon the relationship between learning styles and academic achievement of the learner. The researcher followed descriptive survey method for the study and a sample of 2901 secondary school students were considered for the study. The findings of the study point out that Visual and Group learning styles as Major learning style preferences and Auditory, Kinesthetic, Tactile and Individual learning styles as Minor learning style preference. Moreover, gender of the student influences learning style preferences of the students whereas it does not influence the academic achievement of the student. Researcher also establish a positive correlation between learning styles and academic achievement of the students.

**KEYWORDS:** Learning style, Gender, Academic achievement, Secondary students

The term learning style is generally used to define the ways by which the learners collect, analyse, comprehend and register the information in the mind. The mental processes like understanding, organising, representing and recalling an information would be done differently by each learner. Learning style is broadly defined as “an individual’s natural, habitual and preferred way of absorbing, processing and retaining new information and skills” (Reid, 1995). These are called as learning style preferences.

According to the learning situation and need, learning style of a learner will get adapted and changed. “There are some students who may only have one learning style, in the opposite, others may have many styles all at once” (Prithishkumar & Michael, 2014). Bestowing to the age, every learner prefer their own comforts and styles that would outfit them.

Academic achievement is what students do in their studies and how they handle or complete various learning opportunities provided to them by their teachers. Academic achievement, or how well a student achieves the institution's requirements, is how success in educational institutions is determined. Academic achievement refers to the scores students earn in school examination.

## 1.LEARNING STYLES AND ACADEMIC ACHIEVEMENT OF STUDENTS

According to JilardiDamavandi et.al (2011), “personality traits, behavioural patterns, and psychological variables all affect learning achievement”. For instance, some students might prefer to hear the teacher’s lecture while others might prefer to practise in the lab.

While learning in groups, other pupils can comprehend the subject matter. It is possible that other students can understand what they have learned. “Learning style place an important role in academic performance of the students” (Ridwan et al., 2019; Brown and Etherington, 2013) as the “diverse techniques used in learning styles improves academic performance” (Dewi et. al, 2019).

The success of the teaching-learning process depends on both the teaching and learning styles. The students' motivation to study more effectively would increase if their learning styles were well-recognized, which would have an effect on their academic performance (Gohar & Sadeghi, 2015; Bhattacharyya and Shariff, 2014).

Both teachers and students need to be aware of and understand different learning styles. Teachers must be crucial in this regard to aiding students in enhancing their learning strategies and accomplishments, reducing learning difficulties, and comprehending the diversity of their peers. The most significant benefit of learning styles is that they can direct students' efforts towards raising academic accomplishment. By employing the proper learning style methodologies, they will successfully identify learning tactics and pinpoint their learning shortcomings and strengths.

### 1.1 Definitions of Learning Styles

The term learning style was first introduced by Rita Dunn in 1960 and defined learning style as unique ways used by different individuals as they prepare to learn and recall any information. Ph’ng et al. (2015) defined the learning style as the “chosen style of gathering and organizing thoughts and information”. Pashler et al. (2008) said that the “perceptive, emotional, social, and psychological manners of a person are all intimately linked to learning styles”.

Learning style refers to “not just how students get or acquire knowledge, but also how they communicate what they have learned during the lesson processes” (Hilyatun, 2017; Isda et al. 2016). Additionally, learning style is characterized as a “set of intellectual, emotional, social, and physiological acts that serve as reasonably consistent markers of how students acquire, engage with, and react to their learning climate” (Gilakjani, 2012).

A person's preferred method of handling new information is referred to as their learning style. Learning can be thought of as a permanent change in one's behaviours. The process of learning is unique for every person; learning does not come at the same level and quality even in the same learning techniques (Ilcin et al., 2018).

Learning methodology is primarily concerned with "how" students learn as opposed to "what" they learn. (Gokalp, 2013; Fardon, 2013 as cited by Nja et al., 2019). This theory was backed up by the research of Ling et al., (2017), wherein they held that a student's learning strategy depends more on how they interpret the learning process than it does on the resources or technology they use to study.

### 1.2 Reid’s Perceptual Learning Styles

There are different theories on how a learner adapt their learning styles. Among these perceptual learning theories are more popular. These theories depends upon the learning through sense organs. Perceptual learning styles are “the means by which learners extract information from their surroundings through the use of their five senses” (Davis, 2007). According to Oxford (2003), the term ‘perceptual preferences’ refers to “the physical, perceptual channels with which the student is the most comfortable”. They are specifically described as “the variations among learners in using one or more senses to understand, organize, and retain experience” (Reid, 1987).

It is observed that learning styles are not stable; thus, “students might utilize different techniques depending on their subject and learning environment” (Alharbi et al., 2011). Reid (1995) stated that “learning styles are individual natural, habitual and preferred ways of absorbing, processing, and retaining new information and skills”. He also stated that there are six perceptual learning style preferences.

Reid (1987) also mentioned that learning style preferences refers to the perceptual channels through which students like to learn. These are divided into

- a) Visual learning style-reading and studying diagram
- b) Auditory learning style-listening to lectures and tapes
- c) Kinesthetic learning style-physical activity and movement

- d) Tactile learning style-hands on
- e) Group learning style- studying with others
- f) Individual learning style-studying alone

### 1.2.1 Visual Learning Style

Visual learners prefer to learn by seeing or experiencing things, which may include images, demonstrations, diagrams, etc. Written instructions have the best effects on their performance. Visual learners are drawn to maps, charts, graphs, diagrams, pictures, highlighters, and diverse colours. Visual students are those who best assimilate and integrate information when it is presented to them in a realistic depiction of significant visuals.

### 1.2.2 Auditory Learning Style

The auditory learning style is one in which learners prefer to learn through listening to things, such as spoken words, recordings, sounds and noises, etc. When given vocal directions, they perform at their best. Auditory learners like learning through discussion with teachers and peers, teaching others new ideas, and recording their ideas on tape. Auditory learners effectively internalise information by tuned to music, dialogue, or lecturing. Students that are auditory (or aural) thrive when given the opportunity to hear material presented to them verbally. Therefore, “auditory maintains full attention to lectures instead of taking notes that educators can mistakenly describe as less engaged in class” (Caluza et al., 2022).

### 1.2.3 Kinesthetic Learning Style

Kinesthetic learners like to learn by hands-on activities such as touching, playing, holding, and so forth. In activities, their performance is the finest. Kinesthetic learners favor field trips, doing things to understand them, laboratories, and hands-on methods. The development, impersonation, experimentation, and hands-on involvement benefit the kinesthetic students. Kinesthetic learners require a truly dynamic role in the learning process in order to achieve their optimum learning results. They are active, participative learners. These children usually struggle the most to succeed in traditional classroom settings because of their dynamic personalities.

### 1.2.4 Tactile Learning Style

Readings, essays, textbooks, definitions, and taking notes are a few learning methods that read/write learners find appealing. Students who struggle with reading and writing will typically learn by reading notes or paying attention to what they discover while reading, which helps them to understand the subject. These students demonstrate a strong aptitude for reading and writing. “Reading/writing-oriented students must be motivated by teachers to take notes during classes to help their comprehension and knowledge on the subject richer” (Caluza et al., 2022).

### 1.2.5 Group Learning Style

Reid (1987) explained that students with this style learn best when studying together with others. An individual with group learning style gets information better when working with at least two classmates. Jigsaw (2005) also backed up this idea stating that “learning in groups provide hands on practice”. Group learners learn effectively through verbal language.

### 1.2.6 Individual Learning Style

Reid (1987) stated that individual learners learn effectively when working alone. They are more private, introspective and independent in learning. They enjoy the company of their own.

## 2. ACADEMIC ACHIEVEMENT

Academic achievement is what students do in their studies and how they handle or complete various learning opportunities provided to them by their teachers. Academic achievement, or how well a student achieves the institution's requirements, is how success in educational institutions is determined. Academic achievement refers to the scores students earn in school examination.

### 2.1 Definitions of Academic Achievement

According to Moliuer and Alegie (2020) “academic accomplishment in various topics has been a major worry for students, parents, and education experts”. Anderson (2020) defined “academic achievement as the

performance in school subjects as depicted by scores or marks obtained in an achievement test". Eze (2013) explained further that it refers to the "learning outcomes of students in terms of acquisition of skills, knowledge and ideas needed for gainful employment in related fields or careers". According to these definitions, academic achievement is the information, abilities, and attitude that a student has acquired after successfully completing a particular course of study.

Academic achievement is a measure of learning outcomes that demonstrates a person's level of achievement of certain objectives that were the focus of training or activities in an instructional setting, particularly in schools. However, academic achievement of students could be high, average, low or poor in schools. Abdulahi (2013) described "poor academic achievement as a situation where a student falls below or failed to meet a criterion of acceptable standards". Duze (2011) noted that "teaching and learning methods, inadequate instructional facilities and students' lack of interest and motivation are some of the reasons for poor academic achievement of students". Psychological elements influencing academic achievement are family background, peer group, economic factors, culture of the society and gender.

## **2.2 Importance of Academic Achievement**

Academic achievement is an indicator of student's performance. It is the key mechanism that signifies "learner academic abilities, their talents and competencies which enhances career aspiration and progress of learner's life holistically" (Lent, Brown and Hackett, 2000).

The behavioural changes occurring due to learning experiences are measured by academic achievement scores. Lawrence and Deepa (2013) noted that "accomplishment, knowledge and skills in academic work can be measured by academic achievement".

## **3. NEED AND SIGNIFICANCE OF THE STUDY**

Learning achievement has been identified by Nur'Azizah et al. (2021) and Djamarah (2002) as one of the indicators of a successful student learning experience. Following an explanation of numerous viewpoints and theories, Pikri et al. (2020) and Rachman et.al (2019) found that student accomplishment can be impacted by teachers' capacity to meet a variety of learning requirements and styles. This approach is important and affects students' marks since learning preferences affect how well pupils take in and process information. A study procedure that takes into account factors like learning styles, methodologies, and abilities is necessary given the importance of learning styles and student accomplishment (Maulidiyah, 2020).

The learning outcomes of students will depend on their preferred learning methods (Cassidy, 2004; Norman, 2009). In order to alter the preparation for the learning activities, the teacher must be aware of the learners' preferred learning styles (Manolis et.al, 2013; Weng et.al, 2019). The belief that the teacher's skill in determining the students' preferred learning style would help to choose the best teaching strategy to ensure the success of the outcome is backed by the opinion from Fletcher, Potts, and Ballinger (2008). "The development of one's cognitive abilities and learning experiences, however, determines one's learning style rather than making it permanent" (Turesky & Gallagher, 2011). "The secret to a student's academic success is choosing the right learning style" (Bire et al., 2014; Amin, & Suardiman, 2016).

To gather information on students' learning preferences and academic preferences, it is essential to determine their learning styles. The procedure raises the pupils' awareness. This insight gives the learner the knowledge he needs to succeed in his learning efforts and inspires him to apply what he has learned (Federico 2000, as cited in Brown et al., 2009). Learning methods help pupils become aware of themselves and might serve as a reminder of their strengths and flaws. Learning motivation is increased when students are aware of their skills and deficiencies (Coffield et.al, 2004).

## **4. OBJECTIVES**

- a) To study the gender influence on learning styles of students.
- b) To study the gender influence on academic achievement of students.
- c) To study the relationship between learning styles and academic achievement of students.

## **5. HYPOTHESES**

- a) There is no significant difference in the mean scores of learning styles of the students with respect to gender.
- b) There is no significant difference in the mean scores of academic achievement of the students with respect to gender.

- c) There is no significant correlation between the mean score of overall learning styles and academic achievement of students.

## 6. RESEARCH DESIGN

The researcher followed descriptive survey method. The survey form was prepared based on the Reid's perceptual learning style. The researcher has developed a tool based on the Reid's perceptual learning style which consists of six learning styles namely –visual, auditory, kinesthetic, tactile, individual and group learning style. Survey form consists of 36 statements divided into 6 subheadings. It was constructed in three point scale (Yes, No and Can't say). The form was given to the students of classes IX and X and the perception of students on learning styles were measured using this form. The sample size of students were 2901.

## 7. POPULATION, SAMPLE AND SAMPLING PROCEDURE

The population of the study includes students of Class IX and X of undivided Visakhapatnam district. The schools considered include government and private, residential and non-residential, state board schools and CBSE board schools. Among these 18 residential schools and 18 non-residential schools were selected randomly. These schools are located in the urban (12 schools), rural (12 schools) and tribal area (12 schools) of the district.

It is impossible, time consuming and economically not suitable to reach each and every one in the universe for the study. For the study to be more reliable and scientific adequate sample to be selected. For this, the population was divided into strata based on locality and type of residence of the school. The researcher adopted Stratified random sampling technique of probability sampling to select the sample from the population of the study. Sample consists of students of class IX and X. A total of 2901 students from 36 schools of Visakhapatnam district of Andhra Pradesh State were considered as sample.

## 8. ANALYSIS AND INTERPRETATION

The objectives were analysed in by using statistical techniques like t-value and correlation value.

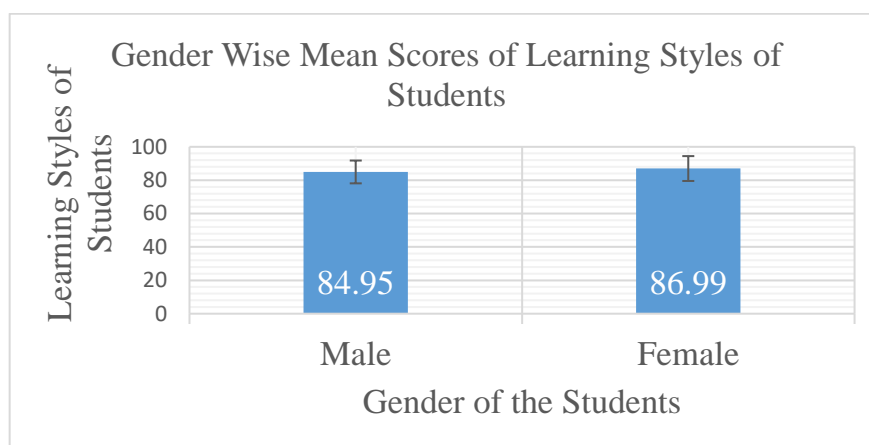
### 8.1 Gender-wise comparison of mean scores of Learning Styles of Students

First objective was to compare the learning styles preferences of students based on gender. For this, the mean (M), standard deviation (SD) and t -values were found out and given in the following table 8.1.

**Table 8.1 Gender-wise comparison of mean scores of Learning Styles of Students**

Variable		N	M	SD	t-value	p-value
Gender	Male	1381	84.95	6.83	7.67**	0.00
	Female	1520	86.99	7.45		

To compare the mean scores of learning styles of students based on gender, the data was analysed with the help of t-test and the results are given in Table 8.1. It is observed from table 8.1 that, for the variable gender, the t-value is 7.67 which is significant at 0.01 level with df =2899. It indicates that there is a significant difference in the learning styles of male and female students. Thus, the null hypothesis that there is no significant difference in the mean scores of learning styles of male and female students is rejected. Further, the mean scores of learning styles of female students is 86.99 which is significantly higher than those of male students whose mean scores of learning styles is 84.95. It may be said that female students were found to have significantly higher use of combination of learning styles than male students.



**Graph 8.1 Gender-wise mean scores of Learning Styles of Students**

The results go along with the findings of Sultana and Kundu (2022), Khan and Khan (2022), Natsir et.al (2022), Sanat, Kamal and Mukhopadhyay (2016) and Haddioui and Khaldi (2017), as they found that learning styles of boys differ from girls. It is contradictory with the finding of Li, Yang and Jing (2022), Vyjayanthi (2016), Oommen (2015), Nzesei (2015) and Tyagi (2014) as they stated that learning styles of boys and girls does not differ. The results are supported by Rwandema (2017) and Babu (2015) as they stated that girls have better learning styles than boys. On contrary, Njal et.al (2019) stated that boys have better learning styles than girls.

## 8.2 Gender-wise comparison of mean scores of Academic achievement of Students

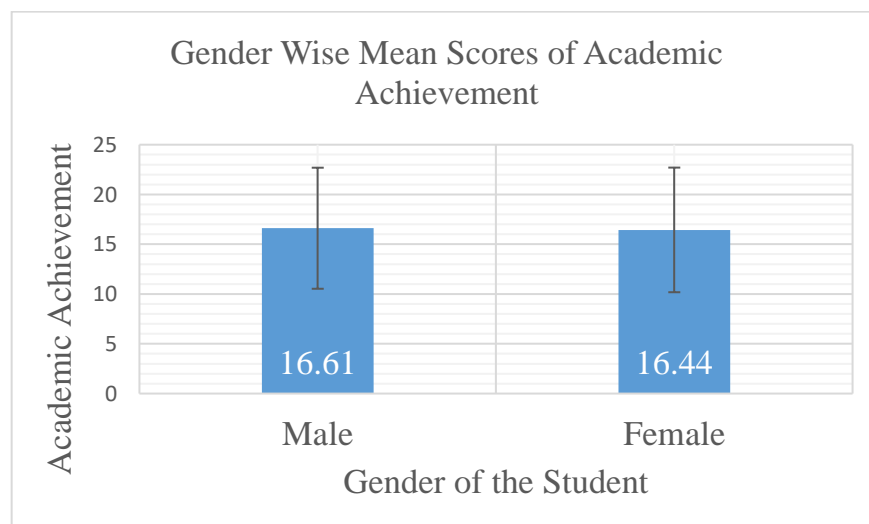
The second objective was to compare the academic achievement of students based on gender. For this, the mean, standard deviation and t-values were found out and given in the following table 8.2.

**Table 8.2 Gender-wise comparison of mean scores of academic achievement of students**

Variable		N	M	SD	t-value	p-value
Gender	Male	1381	16.61	6.08	0.74	0.46
	Female	1520	16.44	6.26		

To compare the mean scores of academic achievement of students based on gender, the data was analysed with the help of t-test and the results are given in Table 8.2. It is observed from table 8.2 that, for the variable gender, the t-value is 0.74 which is not significant at 0.05 level.

It indicates that there is no significant difference in the academic achievement of male and female students. Thus, the null hypothesis that there is no significant difference in the mean scores of academic achievement of male and female students is not rejected. It may be said that both male and female students were found to have same academic achievement.



**Graph 8.2 Gender wise mean scores of Academic Achievement**



The findings contradict with Kumari and Garg (2022), Dev and Kuldeep (2022), Prabhu and Jayanthi (2022), Sunita and Anchal (2022), Saikia (2022), Rosario et al. (2022), Rwandema (2017), Manimozhi (2016), Manoharan (2015) and Tyagi (2014) as they stated that gender influences academic achievement of students. The results are supported by Kant and Sharma (2022), Ahemed et.al. (2022), Mashebe and Zulu (2022), Khan and Ali (2021), Oommen (2015) and Ekeke and Telu (2017) as they stated that gender does not influence in the academic achievement of students.

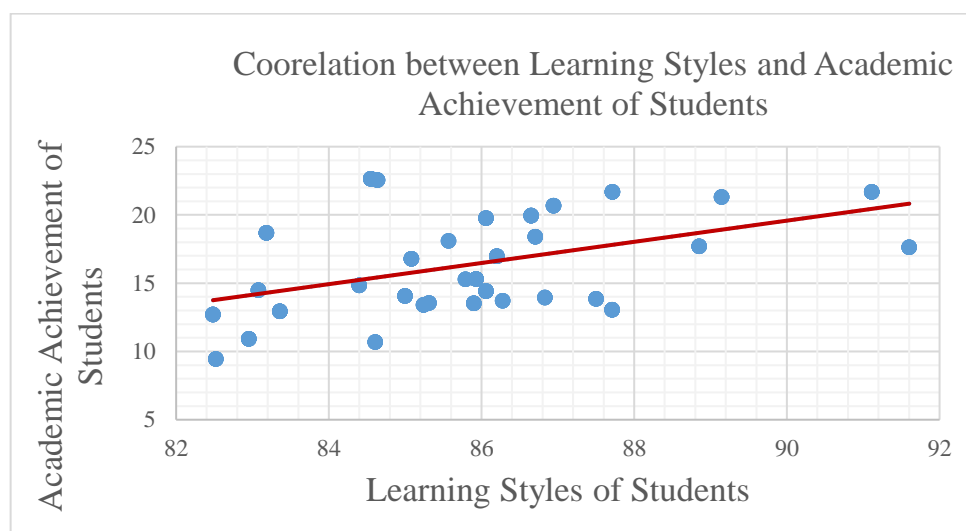
### 8.3 Correlational Analysis of Learning Styles and Academic Achievement of students

The third objective was to compare the correlation between learning styles and academic achievement of students. This is done by Pearson product moment correlation method and the results are given in Table 8.3.

**Table 8.3 Correlation between Learning Styles and Academic Achievement of Students**

Variable	R	Remarks
Learning styles and academic achievement of students	0.69	$p < 0.05$

From table 8.3, it can be seen that the correlation coefficient is 0.69 which is significant at 0.05 level with  $df = 2899$ . It indicates that there is a significant positive correlation between learning styles and academic achievement of students. Thus, the hypothesis that there is no correlation between learning styles and academic achievement of students is rejected. The percentage of commonness between the variables are  $0.69 \times 0.69 \times 100 = 47.61 = 48\%$  which is average. It may be said that learning styles and academic achievement of students were found to have an average positive relationship.



**Graph 8.3 Correlation between Learning Styles and Academic Achievement of Students**

The result is supported by the findings of Mariana, Kurniadi and Sany (2023), Cuizon (2022), Njar and Bhat (2021), Nosheen and Hussain (2020), Njal et.al (2019), Gopalakrishnan and Palanivelu (2018), Rwandema (2017), Manimozhi (2016), Oommen (2015), Babu (2015), Nzesei (2015) and Tyagi (2014) as they found that there exist significant correlation between different learning styles and academic achievement of students.

Contradictory results were found by Naenah (2022), Benitez-Correa et.al (2022), Desai and Shah (2021), Seng and Tep (2021), Cimermanová (2018) and Prihatiningrum (2018) as they found that there is no significant correlation between different learning styles and academic achievement of students.

## 9. CONCLUSION

It was found out from the study that gender is not an influencing factor of academic achievement of the students. But gender significantly influence the learning styles of students. It is also seen that female students use combination of learning styles. Learning styles and academic achievement of students were found to have an average positive relationship. Therefore, male students may use combination of learning styles while studying as their mean scores were less than their counterparts.

The outcomes of present study may be helpful for the teachers, parents, school administrators, policy makers and other stakeholders to know the extent to which learning styles of students and academic

achievement of students are related. It is the duty of teachers and school administration to create conducive and congenial learning environment inside and outside school so that students can excel in learning. Productive learning can be ensured by this. Teachers and parents could identify the learning style of the students and guide them accordingly. Individual and group guidance, parent teacher meeting, use of resources like library and counselling and guidance programmes would lead to better learning styles and academic achievement.

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