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**P Vaishnavi**  
Assistant Professor,  
Department of Agricultural  
Extension, School of  
Agricultural Sciences,  
Dhanalakshmi Srinivasan  
University, Samayapuram,  
Trichy, Tamil Nadu, India

**Thirumal A**  
Ph.D. Scholar, Department of  
Agricultural Extension,  
University of Agricultural  
Sciences, Bangalore,  
Karnataka, India

**Aparna Jayan R**  
Ph.D. Scholar, Department of  
Agricultural Extension &  
Communication, N. M. College  
of Agriculture, NAU, Navsari,  
Gujarat, India

**Seles Kaviya G**  
Ph.D. Scholar, Department of  
Extension Education, PAU,  
Ludhiana, Punjab, India

**Corresponding Author:**  
**P Vaishnavi**  
Assistant Professor,  
Department of Agricultural  
Extension, School of  
Agricultural Sciences,  
Dhanalakshmi Srinivasan  
University, Samayapuram,  
Trichy, Tamil Nadu, India

## Students learning style preferences across academic levels in selected agricultural universities in Tamil Nadu

**P Vaishnavi, Thirumal A, Aparna Jayan R and Seles Kaviya G**

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### Abstract

Learning style denotes the characteristic way in which students perceive, process, and retain information during the learning process. It reflects an individual's preferred approach to acquiring and comprehending knowledge. The predominant categories of learning styles are visual, auditory, and kinesthetic. The present study carried out in Tamil Nadu with the objective of identifying the learning styles of undergraduate, postgraduate, and doctoral students, and examining their association with academic performance and time devoted to self-study.

Ninety students selected as respondents based on random sampling method and data gathered using a well-structured questionnaire. The analysis was performed using one-way ANOVA along with frequency and percentage methods. Results revealed that 76.67 percent of the respondents exhibited a medium level of learning style preference, followed by 13.33 percent at a high level and 10.00 percent at a low level. With regard to academic performance, more than half of the students (52.22%) fell into the medium category, 36.67 percent into the high category, and 11.11 percent into the low category. Concerning self-study, 57.78 percent of respondents belonged to the medium group, 31.11 percent to the low group, and only 11.11 percent to the high group. Findings of the study indicated that learning styles did not exert a significant influence on either academic performance or time spent on self-study.

**Keywords:** Learning styles, undergraduate students, postgraduate students, doctoral students, academic performance, self-study

### Introduction

Learners differ significantly in the ways they acquire, process, and apply knowledge, which is generally referred to as learning styles. The concept emphasizes that each student has a distinct preference for absorbing and interpreting information, and instructional effectiveness can be enhanced by aligning teaching strategies with these preferences. Learning style assessments, although varied in nature, generally attempt to identify whether learners favor visual, auditory, or kinesthetic modes of instruction. Students may learn through observing and listening, reflecting and experimenting, applying logical or intuitive reasoning, or relying on memory and visualization. Consequently, the term learning style encompasses the strategies, methods, and approaches that shape a learner's interaction with the learning environment. Variations in motivation, attitudes towards teaching and responsiveness to instructional methods further contribute to these differences. The more teachers recognize and adapt to such diversity, the greater the likelihood of addressing the needs of all learners effectively (Felder & Brent, 2005) [3].

However, the heterogeneity among students presents challenges. Learners enter classrooms with diverse backgrounds, abilities, interests, goals, motivation levels, and approaches to study. Similarly, instructional methods vary across educators; while some prioritize lectures, others emphasize demonstrations, discussions, or applications. The amount of knowledge a student gains is influenced not only by prior preparation and aptitude but also by the compatibility between learner characteristics and the instructor's teaching style (Felder & Brent, 2005) [3]. Learning styles, therefore, can serve as diagnostic tools to understand how students engage with instructional content. According to Cronbach and Snow (1977) [2], these styles can guide the selection of teaching strategies most suitable for a particular learner.

When teaching approaches are designed to align with students' learning preferences, learning outcomes are likely to be more effective (Pashler *et al.*, 2008) [9].

In applied disciplines such as agricultural education, the alignment between teaching methods and learning styles becomes particularly significant. Professional courses, including agriculture and horticulture, demand practical engagement beyond theoretical knowledge, and hence, learners may exhibit varied learning style preferences depending on course requirements. Despite this, many instructors remain unaware that students process and internalize classroom content in different ways. The present study undertaken to examine the learning styles of undergraduate, postgraduate, and doctoral students and to explore their relationship with academic performance and time devoted to self-study.

### Objectives

The study was designed with the following objectives:

1. To identify the learning styles of undergraduate, postgraduate, and doctoral students.
2. To examine the relationship between learning styles, academic performance, and the amount of time devoted to self-study.

### Methodology

The study was carried out at Annamalai University (AU) and Tamil Nadu Agricultural University (TNAU), both located in Tamil Nadu. A total of 90 students were selected using a random sampling technique. To assess their learning styles, a structured questionnaire was employed, consisting of statements measured on a three-point continuum: often (score 3), sometimes (score 2), and seldom (score 1). The

questionnaire included items designed to capture students' preferences for different modes of learning. Data were collected through direct administration of the tool, ensuring accuracy and completeness. The responses subjected to statistical analysis using frequency distribution, percentage analysis, and one-way ANOVA to identify differences and associations between learning styles, academic performance, and time spent on self-study.

### Questionnaire employed in this study

#### Understanding Learning Styles among Undergraduate, Postgraduate and Doctoral Programme Students

Respondent No: \_\_\_\_\_

#### Part - I

##### General information

1. Name of the respondents:
2. Age (in completed years):
3. Gender: Male/Female
4. Education: Undergraduate/Postgraduate/Doctorate of Philosophy
5. Family background: Rural/Urban
6. Parental Occupation: Agriculture/Business/Service/Others
7. Academic Performance: Distinction (9.1-10.0)/First class (8.1 - 9.0)/Second class (7.10-8.0)/Pass class (Below 7)
8. Time spent for Self-study: \_\_\_\_\_ (No. of. hours)
9. WhatsApp No.:
10. E-mail:

#### Part - II

##### Learning styles

| S. No | Statements                                                                                                           | Often | Sometimes | Seldom |
|-------|----------------------------------------------------------------------------------------------------------------------|-------|-----------|--------|
| 1.    | I can remember best by listening to a lecture that includes information, explanations and discussions.               |       |           |        |
| 2.    | I prefer to see information written on the board and supplemented by visual aids and assigned readings               |       |           |        |
| 3.    | I like to write things down or take notes for visual review                                                          |       |           |        |
| 4.    | I prefer to use posters, models, or actual practice and other activities in class                                    |       |           |        |
| 5.    | I require explanations of diagrams, graphs, or visual directions                                                     |       |           |        |
| 6.    | I enjoy working with my hands or making things                                                                       |       |           |        |
| 7.    | I am skillful with and enjoy developing making graphs and charts                                                     |       |           |        |
| 8.    | I can tell if sounds match when presented with pairs of sounds                                                       |       |           |        |
| 9.    | I can remember best by writing things down several times                                                             |       |           |        |
| 10.   | I can easily understand and follow directions on a map                                                               |       |           |        |
| 11.   | I do best in academic subjects by listening to lectures and tapes                                                    |       |           |        |
| 12.   | I play with coins or keys in my pocket                                                                               |       |           |        |
| 13.   | I learn to spell better by repeating words out loud than by writing the words on paper                               |       |           |        |
| 14.   | I can understand a news article better by reading about it in the newspaper or online                                |       |           |        |
| 15.   | I chew gum, smoke or snack while studying                                                                            |       |           |        |
| 16.   | I think the best way to remember something is to picture it in my mind                                               |       |           |        |
| 17.   | I learn the spelling of words by "finger spelling" them                                                              |       |           |        |
| 18.   | I would rather listen to a good lecture or speech than read about the same material                                  |       |           |        |
| 19.   | I am good at working and solving jigsaw puzzles and mazes                                                            |       |           |        |
| 20.   | I grip objects in my hands during learning periods                                                                   |       |           |        |
| 21.   | I prefer listening to the news on the radio or online rather than reading about it in a newspaper or on the internet |       |           |        |
| 22.   | I prefer obtaining information about an interesting subject by reading about it                                      |       |           |        |
| 23.   | I feel very comfortable touching others hugging, handshaking, etc.                                                   |       |           |        |
| 24.   | I follow oral directions better than written ones                                                                    |       |           |        |

## Findings and Discussions

**Table 1:** Distribution of students based on learning style

| (n = 90) |          |           |         |
|----------|----------|-----------|---------|
| Sl. No   | Category | Frequency | Percent |
| 1.       | Low      | 09        | 10.00   |
| 2.       | Medium   | 69        | 76.67   |
| 3.       | High     | 12        | 13.33   |
| Total    |          | 90        | 100.00  |

Table 1. Results revealed that more than three-fourths of the respondents (76.67%) fell into the medium category, while 13.33 percent and 10.00 percent of students were classified under high and low learning style levels, respectively. This indicates that the majority of students exhibited a moderate preference for learning styles.

**Table 2:** Distribution of academic performance of students

| (n = 90) |          |           |         |
|----------|----------|-----------|---------|
| Sl. No   | Category | Frequency | Percent |
| 1.       | Low      | 10        | 11.11   |
| 2.       | Medium   | 47        | 52.22   |
| 3.       | High     | 33        | 36.67   |
| Total    |          | 90        | 100.00  |

With respect to academic performance (Table 2), it was observed that more than half of the respondents (52.22%) belonged to the medium category, followed by 36.67 percent in the high category and 11.11 percent in the low category. These findings suggest that most students performed within an average range, with a considerable proportion achieving higher academic scores.

**Table 3:** Distribution of time spent for self-study of students

| (n = 90) |          |           |         |
|----------|----------|-----------|---------|
| Sl. No   | Category | Frequency | Percent |
| 1.       | Low      | 28        | 31.11   |
| 2.       | Medium   | 52        | 57.78   |
| 3.       | High     | 10        | 11.11   |
| Total    |          | 90        | 100.00  |

The results regarding time spent on self-study (Table 3) indicated that 57.78 percent of students fell under the medium category, followed by 31.11 percent in the low category and only 11.11 percent in the high category. This demonstrates that while most students allocated a moderate amount of time for self-study, relatively few invested a high number of hours.

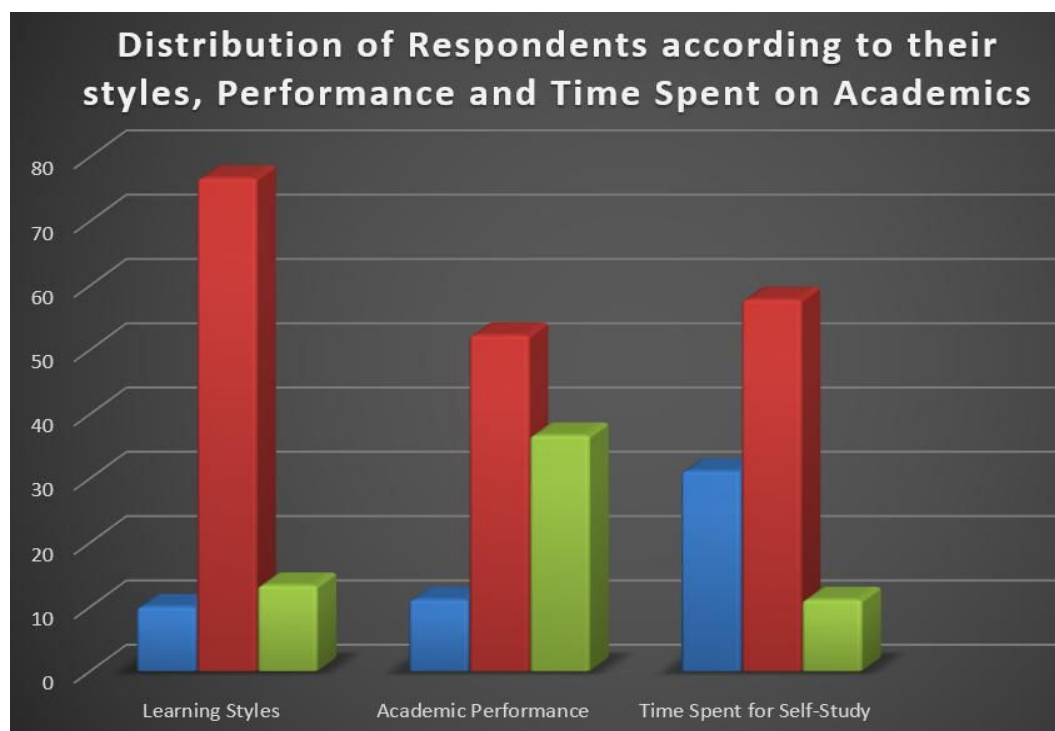


**Fig 1:** Depicting the selected parameters of academic students in this study

**Table 4:** One-way ANOVA for significant score differences between learning style

| Cases                     | Sum of Squares | df | Mean Square | f     | P     |
|---------------------------|----------------|----|-------------|-------|-------|
| Academic Performance      | 94.888         | 03 | 31.629      | 0.163 | 0.921 |
| Residuals                 | 16739.112      | 86 | 194.641     |       |       |
| Time spent for self-study | 361.236        | 04 | 90.309      | 0.466 | 0.761 |
| Residuals                 | 16472.764      | 85 | 193.797     |       |       |

The findings indicate that learning styles did not significantly influence academic performance or self-study practices. This aligns with earlier studies (Karalliyadda, 2017; Turkey & Almigbal, 2015; Victor, 2011) [6, 11, 12], which

also reported no significant relationship between learning style preferences and academic achievement. However, contrary to these results, other studies (Loulwa, 2013) [7] have demonstrated associations between learning styles and academic performance. Such discrepancies may arise from the limitations of learning style models in capturing the complexity of students' cognitive processes.

Therefore, while this study found no evidence supporting a direct influence of learning styles on academic performance and self-study, the findings underscore the need for further research. Future investigations should explore alternative frameworks and methodologies for assessing learning preferences and their implications for educational outcomes.

## Conclusion

According to the survey, a vast majority of students showed a medium preference for learning styles, and there was no discernible correlation between learning styles, academic achievement, or the amount of time spent on independent study. These results imply that academic success is not solely determined by learning styles. To accommodate different student preferences, improve engagement, and encourage active involvement, it is still crucial to implement a variety of instructional tactics. Teachers can also assist pupils in identifying their learning styles and modifying their study routines. Incorporating adaptable, learner-responsive pedagogy into faculty development and curriculum design can foster inclusivity at the institutional level. The study's overall findings highlight the need to develop student-focused learning environments that promote equitable academic growth.

## Conflict of Interest

Authors do not have any potential conflicts

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