

## RELATIONSHIP AMONG LEARNING STYLES, PROBLEM SOLVING SKILLS AND ACADEMIC ACHIEVEMENT AMONG HIGH SCHOOL STUDENTS

**Dr. R. PERIASAMY**

Assistant Professor,  
Department of Education and Management,  
Tamil University, Thanjavur – 613010.

### Abstract

The main objective of the present study is to investigate the relationship among learning styles, problem solving skills and academic achievement among high school students. The investigator has implemented normative survey method in view of realizing the objectives of the study. The population for the present study is consists of 700 ninth standard students are studying in the high schools and higher secondary schools in Thanjavur district of Tamil Nadu. Using simple random sampling procedure from the list of schools the researcher identified 30 schools and 700 ninth standard students from Thanjavur district. The investigator used a learning styles questionnaire and problem solving skills inventory which is constructed and standardised by Periasamy. The present study found out there is no high level of mean score of learning styles, problem solving skills and academic achievement among the high school students. The level of these three variables is an average level. The present study found out there is a significant positive correlation among learning styles, problem solving skills and academic achievement among high school students.

**Key Words:** Learning Styles, Problem Solving Skills, Academic Achievement, High School Students

### Introduction

The present study emphasizes its attention on the learning styles and problem solving skills influencing the academic achievement of ninth standard students. For this, the investigator to explain the chosen learning styles, problem solving skills which may or may not have its influence on the academic achievement of ninth standard students. Learning styles advocate the ways or methods by which students attain learning. It is a constant way of responding to and using stimuli in situation of learning. There are intrinsic variations of learning styles that every individual reflects. Learning style is a personality characteristic that is characteristic and affected by environmental factor and changes over a period of time. It is also determined by many variables such as mental abilities, problem solving skills, self-concept, self-esteem, adjustment, achievement motivation, self-confident, self-awareness, child rearing practices, school environment, peer interaction, self-awareness, involvement in learning on the part of students etc. The problem solving is the highest operation of intellectual process. Problem solving refers to a state of desire for reaching a definite goal from a present condition that either is directly moving towards the goal, is far from it, or needs more complex reason for finding a missing description of conditions or step towards the goal. In psychology, problem solving is the concluding part of a larger process that also comprises problem finding and problem solving. It is the process by which the unfamiliar situation is resolved. The productive work involved in the evaluation of the situation and the strategy worked out to reach one's set goals is collectively termed as problem solving. This is a vital exercise for individual development as also for the improvement of society.

### Need and Significance of the Study

Learning style is a concept that can be considered important in this movement.

Learning style refers to an individual's characteristic way to respond to certain forces in the instructional environment. It shows the different ways in which people process the information in the course of learning. It is an integral concept that bridges the personality cognition dimension of an individual. Among the other variables problem solving skill is considered as an important variable in the past few decades. A person's problem solving skill and learning style also influences a person's general attainment or achievement in learning situations. By this study the researcher wants to find out whether there is any significant relationship between learning styles, problem solving skill and academic achievement of High school students. Hence, the researcher selects the topic entitled **“Relationship Among Learning Styles, Problem Solving Skills and Academic Achievement Among High School Students”**

### **Title of the Study**

The present study entitled as **“Relationship Among Learning Styles, Problem Solving Skills and Academic Achievement Among High School Students”**

### **Objectives of the Study**

The following are the objectives of the study.

1. To find out the levels of learning styles among the high school students.
2. To find out the levels problem solving skills among the high school students.
3. To find out the levels of academic achievement among the high school students.
4. To find out the correlation among learning styles, problem solving skills and academic achievement high school students.

### **Hypotheses of the Study**

The following are the hypotheses of the study.

1. There is no high level of mean score of self - concept among the high school students.
2. There is no high level of mean score of problem solving skills among the high school students.
3. There is no high level of mean score of academic achievement among the high school students.
4. There is no significant correlation among learning styles, problem solving skills and academic achievement among high school students.

### **Limitation of the Study**

Constraint of money and time the investigator limit the population only in XI standard students, randomly selected schools and 300 students only.

### **The Research Method**

The main objective of the present study is to investigate the learning styles, problem solving skills and problem solving skills of high school students. The investigator has implemented normative survey method in view of realizing the objectives of the study. The population for the present study is consists of 700 (2020 -2021) ninth standard students are studying in the higher secondary classes in Thanjavur district. The population for the present study has been identified as the students, in Thanjavur district of Tamil Nadu. The population has been further limited to the high school students who are studying at the high school students who are in ninth standards. For the selection of sample, the researcher collected the details of all the schools in this district. Using simple random procedure from the list of schools the researcher identified 30 schools from Thanjavur district.

### Tools Used for the Study

The following tools were selected and used by the investigator in the present study:

- 1) The tool on Learning styles Scale was developed and standardized by Periasamy (2020).
- 2) The tool on Problem solving skills Inventory was developed and standardized by Periasamy (2020).

### Procedure of Data Collection

The investigator with the permission of the heads of schools and the cooperation of the concerned teachers administered the tools to the high school students. The area of investigation is Thanjavur district. The investigator approached the principals / headmasters of the institutions and got their co-operations insured. The two questionnaires, self - concept scale and problem solving skills inventory along with general data sheet were administered on high school students after explaining the purpose of the study. The scores of the tools were calculated and were tabulated with other relevant data. The data were entered in a suitable manner so that they could be used for computer data processing.

### Statistical Techniques for Data Analysis

The Statistical Package for the Social Sciences (SPSS) version 26.0 was used to analyse the collected data and all the hypotheses were tested at 0.05 and 0.01 levels of significance. The following statistical techniques were used for the analysis of the data: **Descriptive Analysis:** Mean, Standard Deviation and percentage Analysis were employed to study the level of learning styles and problem solving skills inventory of the high school students. **Correlational Analysis:** Bivariate and multivariate correlation analysis were employed to find out the correlation among learning styles, problem solving skills and academic achievement of the high school students.

## III – ANALYSIS AND INTERPRETATION OF DATA

### Null Hypothesis - 1

There is no high level of the mean score of learning styles among the high school students.

**Table 1 The levels of learning styles among the high school students**

Variable	N0.	Low		Average		High	
		No	%	No	%	No	%
Learning Styles	700	2	0.3	496	70.9	202	28.9

Table 1 shows that the obtained levels of learning styles are 0.3%, 70.9% and 28.9% for the low, average and high levels respectively. The students are expected to have optimum level of learning styles. The data show that high school students possess only 28.9% of high level of learning styles. The levels are proved to be unequal. There is a need to take measures to enhance higher level of learning styles among them.

### Null Hypothesis - 2

There is no high level of the mean score of problem solving skills among the high school students.

**Table 2 The levels of problem solving skills among the high school students**

Variable	N0.	Low	Average	High
----------	-----	-----	---------	------

		No	%	No	%	No	%
<b>Problem Solving Skills</b>	700	4	0.6	660	94.3	36	5.1

Table 2 shows the obtained levels of problem solving skills, the maximum percentage 94.3% falls on average level, followed by high level 5.1% and 0.6% for low level. Though there is least level of problem solving skills among the students, the high level of problem solving skills is not in appreciable limit. There are so many factors which have direct and indirect impact upon problem solving skills.

### Null Hypothesis - 3

There is no high level of the mean score of achievement among the high school students.

**Table 3 The levels of achievement among the high school students**

Variable	N0.	Low		Average		High	
		No	%	No	%	No	%
<b>Academic Achievement</b>	700	70	10.0	392	56.0	238	34.0

Table 3 shows the obtained level of achievement of the high school students. The data reveal that more percentage is accumulated in category of average level of achievement. Sum of 56.0% is shared by average level. Only least percentage is shared by low level (10.0%) and high level (34.0%) of achievement. Achievement is treated as one of the factors affecting the outcome of the learners. Therefore, scheme should be designed to increase the high level of achievement among the students.

### Null Hypothesis – 4

There is no significant correlation among learning styles, problem solving skills and achievement score among high school students.

**Table 4 Test of significant correlation among learning styles, problem solving skills and achievement score among high school students**

Background Variables		Learning Styles	Problem Solving Skills	Academic Achievement
<b>Learning Styles</b>	Pearson Correlation	1	.573**	.597*
	Sig. (2-tailed)		.000	.000
	N	700	700	700
<b>Problem Solving Skills</b>	Pearson Correlation	.573**	1	.448
	Sig. (2-tailed)	.000		.000
	N	700	700	700
<b>Academic Achievement</b>	Pearson Correlation	.597*	.448	1
	Sig. (2-tailed)	.000	.000	
	N	700	700	700

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The above table 4 shows that there is a positive correlation between learning styles and problem solving skills; learning styles and achievement score; problem solving skills and achievement. There is a positive correlation between problem solving skills and achievement

scores. Hence the stated null hypothesis is not retained. The multiple correlation is 0.581 also reveals that there is a positive correlation among the learning styles, problem solving skills and academic achievement of high school students. It means learning styles and problem solving skills influences the student's academic achievement and their performance.

### **Major Findings of the Study**

Following are the major findings of the study.

1. There is no high level of mean score of self - concept among the high school students.
2. There is no high level of mean score of problem solving skills among the high school students.
3. There is no high level of mean score of academic achievement among the high school students.
4. There is a significant highly positive correlation among learning styles, problem solving skills and academic achievement among high school students.

### **Recommendations of the Study**

On the basis of findings, the investigator has given the following recommendations:

The mean score level of learning styles problem solving skills and academic achievement of high school students is in moderate level. Therefore, the administrators, teachers and parents should take steps to increase their levels. In the present study the result shows that there is a significant positive correlation among learning styles, problem solving skills and academic achievement of high school students. These findings of the study mend that teacher educators, school administrators and teachers should plan activities for learning and education for students that fit their learning styles or give them hints about how to learn using their preferred learning styles to increase the academic achievement.

The following implication is that educational psychologists need to develop understandings into the specific learning styles which are favoured by the educational system. If students can be empowered to be more mindful of themselves and the ways in which they are possible to achieve better, they can be encouraged to develop more effective and more flexible learning styles. On the other hand, two major strategies have been proposed for enhancing students' achievement. One is through providing learning environments that match students' learning styles. The second strategy is through teaching for a well-adjusted use of styles. In this regard, the basic principle is that, in order for students to advantage maximally from teaching and assessment, at least some of each should match their learning styles. These findings of the study mend that teacher educators, school administrators and teachers should plan activities for learning and education for students that fit their problem solving skills or give them hints about how to learn using their preferred problem solving skills to increase the academic achievement.

### **Conclusion**

The investigator of the present study concluded that there are moderate levels of problem solving skills, learning styles, and academic achievement found in the high school students. The correlation analysis also revealed that there is significant positive correlation between the learning styles and academic achievement, problem solving skills and academic achievement, learning styles and problem solving skills and the levels of learning

styles, levels of problem solving skills and levels of academic achievement. Hence, it is quite clear that the learning styles and academic achievement should properly be instilled or improved in the high school students to achieve more and more in the academic achievement and their life success. In fact, it seems as if the whole system of education chances round the academic achievement of students, though various other outcomes are also expected from the system.

### References

Ashwani Kumar, and Singhal, P.P. (2014). Study of Academic Achievement in Relation to Problem Solving Ability. International Journal of Research in Social Sciences and Humanities, (IJRSSH) 2014, Vol. No. 3, Issue No. I, Jul-Sep ISSN: 2249-4642.

Chan, Chun. Ming. Eric, (2011). Primary 6 Students' Attitudes towards Mathematical Problem-Solving in a Problem-Based Learning Setting. The Mathematics Educator, Vol. 13, No 1, 15-31.

Hemalatha, (2013). Learning styles and their influence on academic achievement. The Educational Review, 45(2), pg.30-32.

Kaplan, E.J and Kies, D.A. (1995). Teaching and learning styles: Which came first? Journal of Instructional Psychology, 22(1), pg.29-33.

Mac.Kinnon, Marjorie M. (1999). CORE elements of students Motivation in Problem-Based Learning, New Directions for Teaching and learning, N.78, 49-58.

Ravibabu, (2014). A study on producing and constructive learning styles among secondary school students. Research and Reflections on Education, 8(3), pg.90.

Sadler-Smith, (1997). Learning style: Frameworks and instruments. Educational Psychology, 17(1), pg.51-63.

Sehrawat and Roy, (2007). Learning style of higher secondary students of Tamil Nadu. Journal of Humanities and Social Science, 19(8), pg.100-104.

Stewart, K.L., Felicetti, L.A. (1992). Learning styles of marketing majors. Educational Research Quarterly, 15(2), pg.15-23.

Vijay Amirtharaj and Jesudoss (2010). Learning styles and academic achievement of X standard students, Research and Reflection on Education, Vol. (8), No. (4).

\*\*\*\*\*