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## REASONING ABILITY OF HIGHER SECONDARY STUDENTS IN RELATION TO LEARNING STYLE.

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### Abstract

The present study was conducted on a sample of 200 higher secondary school students to investigate the relationship between reasoning ability and learning style. Two standardized tools Reasoning Ability Test by Vanajah and Dr.K.Vijaya (2017). Learning Style Scale standardized by Sreekala and Amalraj (2012). Were employed to collect data. The data were analyzed by computing the Pearson's product moment correlation. The analysis of data revealed significant relationship between the reasoning ability and learning style of higher secondary school students. Also the results of the study showed that significant difference was found in reasoning ability and learning style with respect to gender. Further it shows that no significant difference found between the Tamil and English medium students with respect to reasoning ability. Further, it shows that significant difference found between the Tamil and English medium students with respect to learning style. Further it shows that no significant difference found among the reasoning ability and learning style with respect to type of management. The study will be helpful for the educationists and academics to identify the factors which will enhance reasoning ability and learning style of higher secondary students.

**Keywords:** Reasoning ability, Learning style, Higher secondary school students.

### INTRODUCTION

During the last few decades, there has been a radical change in every field on account of scientific inventions and technological advancement. To meet the challenges and requirements of this fast developing society, young people need to grow in the ability to think rationally and to express their thoughts clearly. Independent thinking, careful analysis and objective assessment contribute to success in any field (Gardner, 1985). The

cognitive abilities play an important role in daily routines and patterns of the learners in general and education in particular. It is universally acknowledged fact that the progress of any nation depends mainly on the utilization of potential of its intellectually talented individuals to the maximum (Asch, 2002). The students use different thinking styles to accomplish new information and to approach and manage a learning task, selecting those styles with which they are at ease (Zhang & Sternberg, 2000).

The learning is a vital factor, which makes the learners to acquire the various skills like memorizing, retrieving and retention. These three factors are governed by the reasoning ability. The reasoning ability helps the individuals to acquire abstract and concrete thinking over the concepts and experimental analysis. The reasoning ability helps them to learn symbols, language, word and verbal fluency and numerical ability. Thus the reasoning ability has been considered as the fundamental for acquiring the learning process. Therefore, reasoning ability and learning styles play an important role in the educational process.

### **Concept of Reasoning Ability**

Reasoning is the higher order cognitive process of looking for reasons, belief, conclusions, actions, or feelings. In general, thinking with the implications that the process is logical and coherent- more specifically, problem solving, whereby well informed hypotheses are tested systematically and solutions are logically deduced.

### **Concept of Learning Style**

Learning style is the composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with and responds to the learning environment. It means that students would respond to what they learn on the basis of communication which helps them to understand and use the knowledge based on their physical, mental and emotional capacity to acquire the knowledge, attitude and skill.

### **REVIEWS OF RELATED LITERATURE**

The findings of the studies on learning styles by George and Archana (2012) among secondary and higher secondary students; Yahaya et al., (2010) among secondary school students; Mulalic, Mohd Shah and Ahmad (2009) among the school students, Oxford and Anderson (1995) and Reid (1995) among the Asian students; Wintergerst et al., (2003) among the Chinese college students; Ruzela et al., (2012) on secondary school students; Chia-Wei Hsu and Shu-Chu Chen (2016); and Yeow et al., (2010) showed that the most of the participants have dominant preferences in visual learning styles. Thus, they have reported that visual learning styles was a preferred way of learning. The number of researchers (Ertepmar, 1995; Cavallo, 1996; Abdu, 1998; Johnson and Lawson, 1998; Sungur et al. 2001; Kuhn and Holling, 2008; Tekkaya and Yenilamz, 2006; Oloyede 2012, Gupta, 2012; Nnorom, 2013; Kanchan and Sharma, 2013) have found reasoning ability

influence on academic achievement in various school subjects. Further, gender differences have been found in reasoning ability by some researchers (Valanides, 1997; Yenilmez et al. 2006; Kohn and Holling, 2008; Jeotee, 2012), while Gupta (2012) found no significant gender difference in reasoning ability. However, girls were better in achievement than boys (Yenilmez et al. 2006; Valanides, 1997).

## DEFINITIONS OF KEY TERMS

**Reasoning Ability:** Reasoning ability is the capacity to think logically and solve problems in new situations that is independent of acquired prior knowledge. Tests which are used to measure the capacity of the individual to do specific tasks are called ability tests. Reasoning ability test measures the individual current status with regard to the ability to think abstractly by using reason to derive a conclusion.

**Learning Style:** Learning style refers to orientation or preferences for approaching learning tasks and processing Information in certain ways. It is relatively stable and developed ways of learning in which a person perceives, behaves, and interacts in a learning environment.

### **Higher secondary school students:**

Higher secondary school (HSS) students refer to those students who have enrolled in a school at 11th & 12th class in any government, government aided and private higher secondary schools in Chennai District of Tamil Nadu.

## STATEMENT OF THE PROBLEM

The title of the present study is entitled as Reasoning Ability of Higher secondary Students in Relation to Learning Style. In this study reasoning ability is taken as dependent variable and learning style is taken as independent variable. The main objective of this study is to investigate the extent or degree of reasoning ability and learning style of higher secondary students .Further, this study aims to quantify the influence of certain demographic variables such as gender, medium of instruction and types of management on reasoning ability and learning style of higher secondary students.

## TOOLS USED IN THE STUDY

1. Reasoning Ability Test by Vanajah. and Dr.K.Vijaya (2017) was used in the present study
2. Learning Style Scale standardized by Sreekala and Amalraj (2012).

## SCOPE OF THE STUDY

Learning styles are helpful in the enhancement of academic achievement of the learners. Besides, they are helpful in building a conducive learning environment and in the selection of the most appropriate teaching methods, strategies, styles, devices, and tactics. They provide guidelines to the curriculum framers, developers and evaluators. It is obvious that the learning styles are very useful in the process of curriculum transaction. Accordingly, the levels of reasoning and learning styles of children vary from child to child. Hence, it is essential to modify the teaching strategies to cater to children with different reasoning ability and learning styles in the classroom

## METHOD OF THE STUDY

The survey method is employed for the present study. It is the method of investigation wherein the information is obtained for research purposes for by means of questionnaires from a sample population. It attempts to describe and interpret what exists at present in the form of conditions, practice, processes trends etc. It is concerned with the phenomena that are typical of the normal conditions

## SAMPLE OF THE STUDY

The population comprises Boys and girls participants from different medium of instruction and different types of management. A random sample of 200 students were drawn from the higher secondary students studying in government, government-aided and private higher secondary schools by employing simple random sampling technique. The sub-group of the target population or sample has been drawn from 10 schools comprising government and private schools for the purpose of making generalization about the target population. In this context, the investigator attempts quantify the extent of reasoning ability of higher secondary school students in relation to learning styles in order to provide valid information on the trends of these psychological variables.

## OBJECTIVES OF THE STUDY

The objectives of the proposed study will be as follows:

- To find out if there is any significant relationship between Reasoning ability and Learning style of higher secondary school students.
- To find out if there is any significant difference in the reasoning ability of higher secondary students with respect to certain demographic variable. 1.Gender, 2.Medium of instruction 3.Type of management.
- To find out if there is any significant difference in the learning style of higher secondary students with respect to certain demographic variable. 1.Gender, 2.Medium of instruction 3.Type of management. .

## HYPOTHESES OF THE STUDY

The following hypotheses are formulated based on the objectives of the study.

1. There is a significant relationship between the Reasoning ability and Learning style of higher secondary students.
2. There will be no significant difference between boys and girls with respect to reasoning ability and learning style of higher secondary students.
3. There will be no significant difference between Tamil and English medium of higher secondary students with respect to reasoning ability and learning style.
4. There will be no significant difference in reasoning ability and learning style with respect to Type of management

**Table 1. Correlation coefficient (r) between reasoning ability and learning style among Higher secondary school students**

Variables correlated	N	Calculated 'r' value	Level of significance	Verbal Interpretation
Reasoning ability and Learning Style	200	0.499**	0.01	Positively and Significantly correlated

\*\* Correlation is significant at the 0.01 level

Table 1 show that correlation between reasoning ability and learning style of higher secondary school students was 0.499 which was significant 0.01 levels. This indicated that there existed a significant high correlation between two variables. Therefore, the relationship between reasoning ability and learning style is high.

**Table.2**

**Significant of difference between boys and girls with respect to reasoning ability and learning style of Higher secondary school students.**

Variables	Gender	N	Mean	SD	t value	Significance @ 0.05 Level
Reasoning Ability	Boys	99	76.15	8.699	2.40	Significant
	Girls	101	75.32	8.389		
Learning Style	Boys	98	125.45	7.523	1.97	Significant
	Girls	102	125.00	7.860		

From the above table -2, it is observed that the mean scores and standard deviation of reasoning ability of boys are 76.15 and 8.699 and of girls are 75.32 and 8.389 respectively. The critical ratio of reasoning ability of boys and girls students is 2.40 which is significant at 0.05 level. It indicates that boys and girls differ significantly in their reasoning ability.

Also From the above table it is observed that the mean scores and standard deviation of learning style of boys are 125.45 and 7.523 and of girls are 125.00 and 7.860 respectively. The critical ratio of learning style of boys and girls students is 1.97 which is significant at 0.05 level. It indicates that boys and girls differ significantly in their learning style. Hence hypothesis 2: There will be no significant difference between boys and girls with respect to reasoning ability and learning style of higher secondary students is rejected.

### Hypothesis - 3

There will be no significant difference between students studying in Tamil and English medium with respect to learning style of higher secondary school students.

**Table.3**

**Significant of difference between students studying Tamil and English medium with respect to reasoning ability and learning style of higher secondary school students**

Variables	Medium of instruction	N	Mean	SD	t value	Significance @ 0.05 Level
Reasoning ability	Tamil Medium	122	74.34	9.437	0.34	Not Significant
	English Medium	78	73.89	8.038		
Learning Style	Tamil Medium	122	123.08	7.234	3.34	Significant
	English Medium	78	125.53	6.054		

From the above table -3, it is observed that the mean scores and standard deviation of reasoning ability of Tamil medium students are 74.34 and 9.437 and of English medium are 73.89 and 8.038 respectively. The critical ratio of reasoning ability of Tamil and English medium students is 0.34 which is not significant at 0.05 levels. It indicates that Tamil and English medium students do not differ significantly in their reasoning ability. It shows the boys and girls students possess similar reasoning ability. This may be due to the same characteristics and attitude of Tamil and English medium students with respect to reasoning ability.

Also From the above table it is observed that the mean scores and standard deviation of learning style of Tamil medium students are 123.08 and 7.234 and of English medium are 125.53 and 6.054 respectively. The critical ratio of learning style of Tamil and English medium students is 3.34 which is significant at 0.05 level. It indicates that students of Tamil and English medium differ significantly in their learning style.

**Table.4**

**ANOVA for Reasoning Ability and Learning Style scores of Higher Secondary School Students with respect to Type of Management**

Variables	Group status	Sum of square	df	Mean square	F value	Significance @ 0.05 Level
Reasoning Ability	Between groups	51.677	3	25.854	0.348	Not Significant
	Within groups	14645.687	197	74.348		
	Total	14697.364	200			
Learning Style	Between groups	118.413	3	59.456	1.324	Not Significant
	Within groups	8854.442	197	44.946		
	Total	8972.855	200			

From the table 4, F- ratio calculated for the reasoning ability and learning style with respect to type of schools reveals that students belongs to government, government aided and self- finance schools do not differ significantly in their reasoning ability and learning style. Hence, the formulated hypothesis there will be no significant difference in reasoning ability and learning style with respect to type of schools is accepted. This may due to fact that learning style becomes more mandatory for all type of schools at the present situation, students' possess similar reasoning ability and learning style.

## CONCLUSIONS AND IMPLICATIONS

From the results of the study it has been found that while using different learning styles the students show variations in reasoning abilities. Moreover, students having assimilating and diverging learning styles possess better reasoning abilities. The identification of student learning style helps a student to become an efficient problem solver. The more successful the individual is at solving the problems, the more control one will have over their life. A person educated in an area having no relationship to his learning style may lack confidence, and may result in delayed success. This study is beneficial to students, teachers, parents, school administrators and educators.

Therefore, it is emphasized that teachers and students should be familiar of learning styles. They may try to identify their own learning styles. Thus, recognizing students' learning styles may enable teachers to organize their instructions according to their students' individual needs and facilitates their learning. Besides, teaching according to students learning styles may assist students to become more eager about the subject, investigate and understand the facts and most essentially they put into practice what they have learned. Thus, they may organize instructional strategies according to learning style preferences by their students. Also, in-service teacher training programs may be organized to update teachers about students' learning styles and teaching methods, which are based on students learning styles.

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