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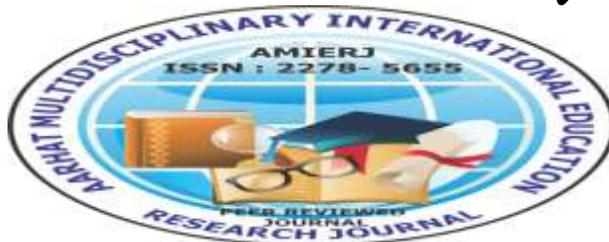
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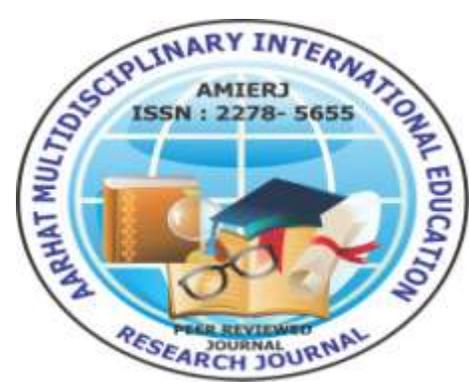
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**ACHIEVEMENT OF SENIOR SECONDARY SCHOOL STUDENTS IN ECONOMICS  
IN RELATION TO STYLE OF LEARNING AND THINKING**

**Education**

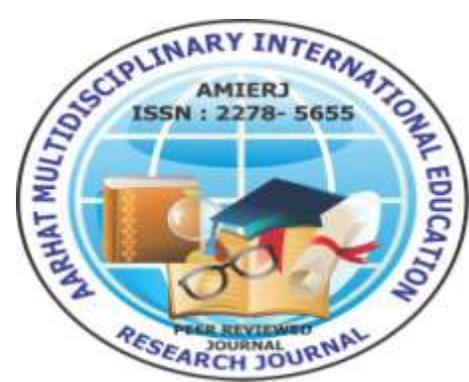
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**Abstract**

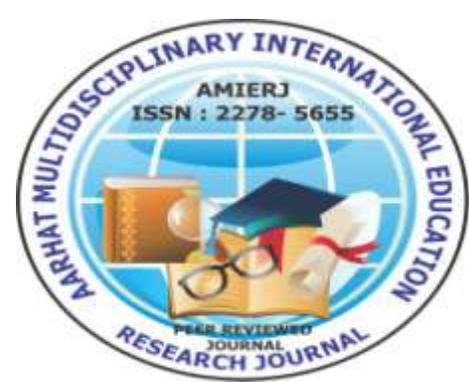
*The success of teaching-learning process depends upon many factors associated with both the teacher and the students. It is a fact that the class-the group of students-to whom the teacher is to teach is heterogeneous. It means the students comprising the class of a teacher come with different learning attributes as the concept of individual differences prevails. To make his teaching a successful one by the mean of achieving the instructional objectives set by him, the teacher needs to meet the individual learning requirement of his students. The teacher is desired to identify the key learning attributes of his class and then plan about his instructional strategy accordingly. It is, no doubt, a complex and tough job on the part of teacher but the effectiveness of his teaching is determined by the extent the students of his class are able to acquire the knowledge imparted by him. One important factor influencing academic achievement of students is students' style of learning and thinking. Depending upon the domain of the learning experience the styles of learning also vary. Individual prefers that very learning style which suits to the nature of its*



*learning task. The objectives of the present study were: To study the style of learning and thinking prevalent among senior secondary school students; To study the effect of style of learning and thinking on achievement in Economics of senior secondary school students; To study the difference in style of learning and thinking of male and female senior secondary school students; To study the difference in achievement in Economics of male and female senior secondary school students. The major findings were: Left brain hemisphere preference was found to be more prevalent among senior secondary school students; there was no significant difference in achievement in Economics of senior secondary school students in relation to their style of learning and thinking; there was a difference in preference for style of learning and thinking between male and female senior secondary students. Female senior secondary school students preferred for Left brain hemisphere while male senior secondary school students had preference for Right brain hemisphere; there was no significant difference in achievement in Economics of male and female senior secondary school students.*

The success of teaching-learning process depends upon many factors associated with both the teacher and the students. It is a fact that the class-the group of students-to whom the teacher is to teach is heterogeneous. It means the students comprising the class of a teacher come with different learning attributes as the concept of individual differences prevails. To make his teaching a successful one by the mean of achieving the instructional objectives set by him, the teacher needs to meet the individual learning requirement of his students. The teacher is desired to identify the key learning attributes of his class and then plan about his instructional strategy accordingly. It is, no doubt, a complex and tough job on the part of teacher but the effectiveness of his teaching is determined by the extent the students of his class are able to acquire the knowledge imparted by him.

There are many factors affecting academic achievement which have been the central focus of the researchers for long time. These factors include the intelligence, study habits, achievement motivation, home environment, parental involvement etc. (Cassidy, & Eachus,



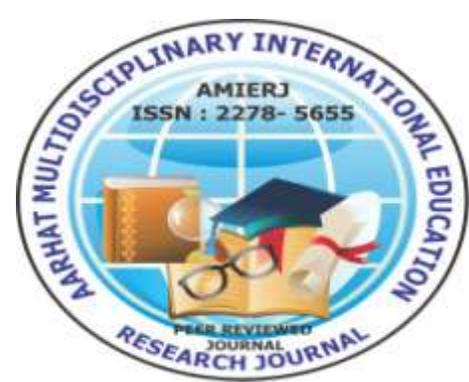
2000). The trend in research targeting the effect of learning styles of students was, however, less noticed. The one reason for this might be the non-availability of the measuring instruments for students' learning styles (Riding, & Cheema, 1991).

Many theories of learning and thinking style are available today (Grabowski, & Jonassen, 1993; Sternberg, & Zhang, 2001). The many aspects of these theories vary. These theories, however, agree at one point. All of them differentiated between the term 'style' and the term 'ability'. The 'style' as generalized by these theories is the preference of an individual to perform something. It is therefore, associated with his interest. It is, however, the separate issue that the individual performs it or not but his preference remains there to do particular thing out of many other options available. On the other hand the ability is not the liking of an individual associated with something to do. It is the skill or perfection to perform some task. (Zhang, 2001).

Research has also been done to explore the factors which have their impact on the learning styles of the students. Glick (1975) stated the type of the society either industrialized or non-industrialized, affected the learning styles of the students. The difference between students' learning styles was also observed on the basis of the socio economic status of the students (Flaugher, 1971; Lesser, Fifer, & Clark, 1965). In a similar study Witkin (1976) found that culture was also one of the potential factor that caused variation in the learning styles of the students. It is witnessed through previous researches that the learning styles of the students influence their learning efficiency (Zhang, 2001).

### **Learning Styles**

Different psychologists gave different concepts about learning styles. Jung (1971) attributed learning styles to the personality types of an individual. He viewed the extroverts and the introverts had differences in their learning styles because of their characteristics. According to Jung every individual has four common mental actions- sensing, intuition, feeling and thinking. Infact, not every individual uses these mental actions in a unique manner. This variation may come from the preference for type of mental actions. The preference for mental



action once developed is rare to change throughout the life. This determines the learning style of an individual (American Association of School Administrators, 1991).

On the basis of the taxonomy of the objectives Bloom (1956) associated the styles of learning with its domains –cognitive, affective and psychomotor. Depending upon the domain of the learning experience the styles of learning also vary. Individual prefers that very learning style which suits to the nature of its learning task.

Gregorc (1984) linked the style of learning with the brain hemisphericity and stated that there were two sets of preferences- perceptual preference and the ordering preference. The perceptual preference has two dimensions i.e. concrete and abstract and in the similar way the ordering preference has also two aspects i.e. sequential and random. The following table shows the characteristics of each of these preferences.

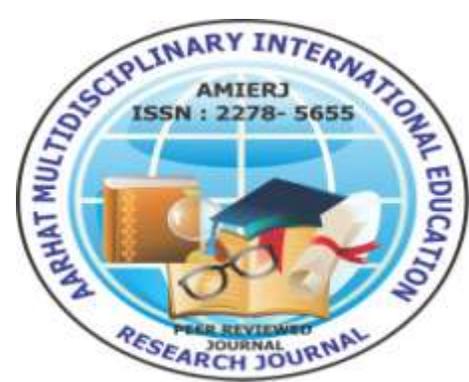
According to Kolb (1984) due to individual differences every individual learner has some distinct psychological attributes which decide the strategies adopted by him in his learning processes. So, the learning styles are the way individual learner processes and transforms the knowledge received (Abidin, Rezaee, Abdullah, & Singh, 2011).

Keefe (1987) while defining the learning styles has taken into account the three aspects i.e. cognitive, affective and psychological. These three traits used by an individual decide the way he perceives, interacts with and responds to the information (Abidin, Rezaee, Abdullah, & Singh, 2011).

Schmeck (1982) defined learning styles as the approach adopted by learner to respond to the information. This approach for an individual remains consistent irrespective of the learning conditions.

### **Thinking Styles**

Sternberg (1997) defined thinking styles as the preference of an individual to do something and the way he continues with the same preference when some problem occurs. The thinking style is more concerned with the approach of an individual to process information (Sharma, & Neetu, 2012).



Sternberg (1997) and his associates in a theory of mental self-government compared the style of thinking with the style of functioning of a govt. On the basis of this comparison he identified three types of thinkers i.e Legislative Style Thinkers or Creators; Executive Style Thinkers or Implementers; Judicial Style Thinkers or Evaluators (Zhang, 2001).

Both the style of learning and style of thinking are interrelated to each other and also have a noteworthy influence on the academic achievement of students (Cano-Garica, & Huges, 2000).

According to Dunn (1983) if the learning and thinking styles of students are known to the teacher and also if he plans his teaching activities accordingly, it will help students to perform well. Because it is not the level of difficulty of the content that hinders students' performance but the mismatch between teaching methodology and the cognitive approaches needed to acquire the knowledge imparted (Keefe, & Ferrel, 1990).

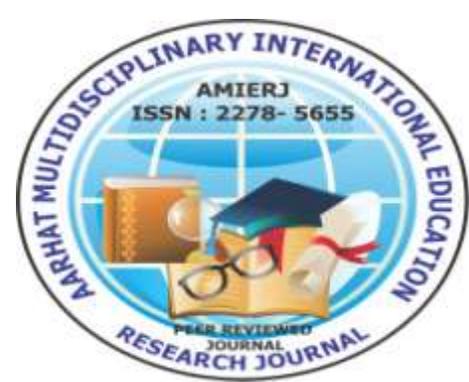
### **Brain Hemisphericity**

The style of learning and thinking of an individual further depends upon the brain hemisphericity. The research shows that our brain is divided into two halves i.e. the left brain hemisphere and the right brain hemisphere. Both of these brain hemispheres have their distinct characteristics and specialization. Due to this distinctive nature both brain hemispheres arrive at a different conclusion even in the same situation (Leng, & Hoo, 1997).

Earlier the hemisphericity was used to be categorized on the basis of types of the tasks performed and not on the basis of the way of information processing. However, researchers now have started classifying brain hemisphericity by considering the cognitive functions (Leng, & Hoo, 1997). There is sufficient literature available in support of this new concept of hemisphericity.

### **Left Brain Hemisphericity**

The left brain hemisphere is specialised in sequential logical verbal, symbolic, convergent production and the logic functioning (Ornstein, 1973). This brain hemisphere analyses the verbal as well as the mathematical content using logical thinking in a linear manner



i.e. step by step (Bielefeldt, 2006). This brain hemisphere is considered to be more active than the right brain hemisphere (Venkataraman, 1994).

### **Right Brain Hemisphericity**

The right brain hemisphere is specialised in spatial orientation, learning through exploration, concrete learning, divergent thinking, creativity, deep thinking, independent thinking, learning by synthesizing and experimentation, multitasking. It follows a holistic approach (Bielefeldt, 2006).

### **Whole Brain Hemisphericity**

Both the brain hemispheres are connected to each other through a nerve fibre called corpus callosum which ensures the inert-communication between the both brain hemispheres-right and left (Leng, & Hoo, 1997). When an individual uses the characteristics of both the right as well as left brain hemispheres, it is attributed to whole brain hemisphericity. In other words whole brain hemisphericity refers to the joint functioning of both the left and right brain hemispheres.

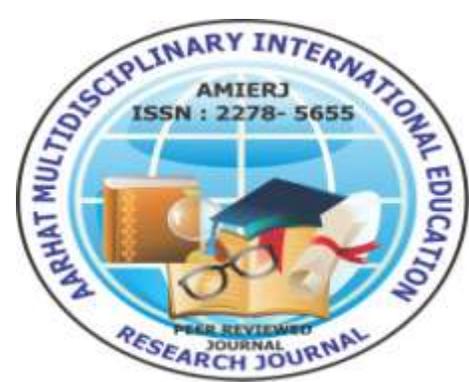
### **Objectives of the Study**

The objectives of the study were as follows.

1. To study the style of learning and thinking prevalent among senior secondary school students.
2. To study the effect of style of learning and thinking on achievement in Economics of senior secondary school students.
3. To study the difference in style of learning and thinking of male and female senior secondary school students.
4. To study the difference in achievement in Economics of male and female senior secondary school students.

### **Hypotheses**

1. There is no significant difference in achievement in Economics of senior secondary school students in relation to their style of learning and thinking.



2. There is no significant difference in style of learning and thinking of male and female senior secondary school students.
3. There is no significant difference in achievement in Economics of male and female senior secondary school students.

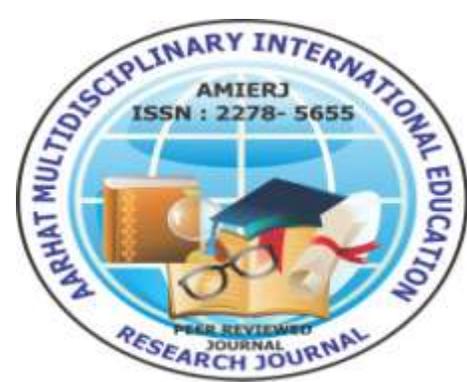
### **Methodology**

The purpose of the present study was to study the effect of style of learning and thinking on achievement in Economics of senior secondary school students. To fulfill this purpose a sample of 200 senior secondary school students was drawn randomly from five senior secondary schools from Distt Pathankot of Punjab (India). After selecting the sample the *Style of Learning and Thinking (SOLAT) scale* by Venktaraman (1994) was used to study the style of learning and thinking prevalent among senior secondary school students. Achievement in Economics was measured by administering *Achievement Test in Economics* developed and standardized by the investigator himself. For analyzing the results, percentage, t-test and ANOVA were used as statistical techniques. The results are summarized below.

**Table 1: Percentage of Students with respect to SOLAT**

<b>Style of Learning and Thinking</b>	<b>No. of Students</b>	<b>Percentage</b>
Left Brain hemisphere	70	35%
Right Brain hemisphere	68	34%
Whole Brain hemisphere	62	31%

It is evident from table 1 that not much variation was found among senior secondary school students with respect to their style of learning and thinking. Left Brain hemisphere preference (35%) was found to be more prevalent among senior secondary school students followed by Right Brain hemisphere Preference (34%) and Whole Brain hemisphere Preference (31%).



**Table 2: Significance of Difference in Achievement in Economics in relation to SOLAT**

Sources	Sum of Squares	df	Mean Square	F-value
Between Groups	36.814	2	18.407	.174
Within Groups	20856.866	197	105.872	

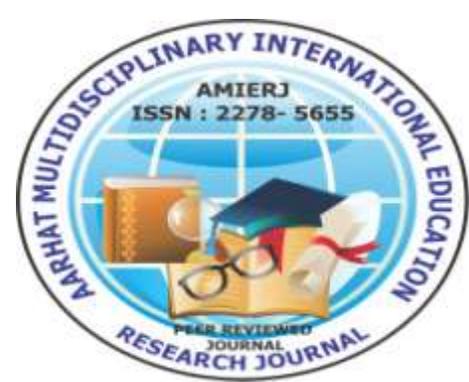
Table 2 reveals that there was no significant difference in achievement in Economics of senior secondary school students in relation to their style of learning and thinking. Thus the hypothesis- there is no significant difference in achievement in Economics of senior secondary school students in relation to their style of learning and thinking, stands accepted.

**Table 3: Percentage of Male and Female Students with respect to SOLAT**

Style of Learning and Thinking	No. of Female Students	No. of Male Students
Left Brain hemisphere	38 (38%)	32 (32%)
Right Brain hemisphere	32 (32%)	36 (36%)
Whole Brain hemisphere	31 (31%)	31 (31%)

Table 3 shows that there was a difference in preference for style of learning and thinking between male and female senior secondary students.

Left brain hemisphere preference was most prevalent among female senior secondary school students (38%) while for male senior secondary school students the most preferred style of learning and thinking was found to be Right Brain hemisphere preference (36%). The second most preferred style of learning and thinking among female senior secondary school students



was Right Brain hemisphere where as for male senior secondary school students it was Left brain hemisphere. The Whole Brain hemisphere was found to be least preferred by both male as well as female senior secondary school students. Thus the hypothesis- there is no significant difference in style of learning and thinking of male and female senior secondary school students was rejected.

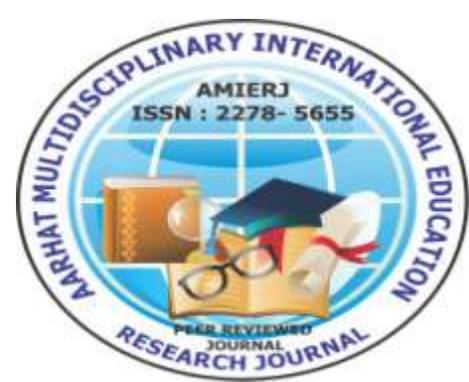
**Table 4: Significance of Difference in Achievement in Economics in relation to Gender**

Gender	N	Mean	SD	t-value
Male	100	56.25	9.062	1.10
Female	100	57.85	11.318	

It is evident from above table that the mean achievement score of male senior secondary school students was found to be 56.25 while that of female senior secondary school students was 57.85. The t-value was calculated as 1.10 which is not significant at 0.05 level. Thus the hypothesis that- there is no significant difference in achievement in Economics of male and female senior secondary school students was accepted.

### **Main Findings**

1. Left brain hemisphere preference was found to be more prevalent among senior secondary school students.
2. There was no significant difference in achievement in Economics of senior secondary school students in relation to their style of learning and thinking.
3. There was a difference in preference for style of learning and thinking between male and female senior secondary students. Female senior secondary school students preferred for Left brain hemisphere while male senior secondary school students had preference for Right brain hemisphere.



4. There was no significant difference in achievement in Economics of male and female senior secondary school students

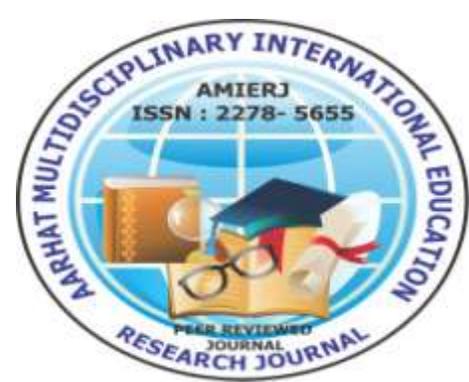
### **Educational Implications**

It is also essential to identify the styles of learning and thinking of children in order to facilitate the process of learning and teaching. Since the focus is on child-centred pedagogy giving primacy to the child's experiences, voices, thoughts and participation in learning which the National Curriculum Framework (2005) reiterates in its chapter on 'Learning and Knowledge', it becomes necessary to change our approach to teaching. In fact, knowledge of the child's information processing styles would enhance teaching and make the exercise fruitful. The teaching techniques in the schools can be undertaken in consonance with the students' style of learning and thinking. Further it would enable the teacher to organize the teaching and learning procedures in such a way that they tone up and activate the brain hemisphere functions of the brain in students. Different teaching techniques and methodologies can be adopted to activate and influence the brain hemisphere functions of the brain . It is recommended to conduct continuous professional in-service trainings for instructors to be oriented on the following:

- Students' hemispheric dominance and their descriptive processing information characteristics
- Students' learning styles
- Multiple intelligences and their implications in identifying student capabilities and tendencies.

A knowledge of the above can guide the professors in their choice of teaching strategies, thus enhancing students learning.

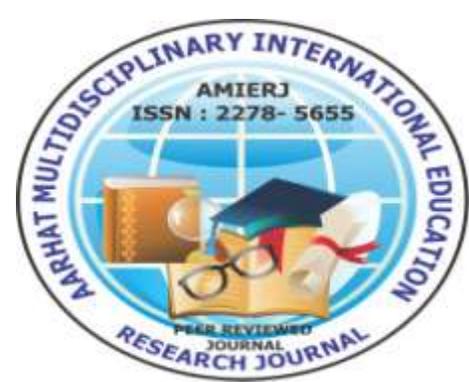
Students' learning styles, multiple intelligences and hemispheric dominance characteristics must also be considered in the preparation of materials in order to develop the diversified skill processing functions of the brain. Textbooks produced must take into consideration the text types and tasks which should match the students' hemisphericity. The theories of



brain-based learning and multi-intelligences support the idea that teachers must expand their teaching techniques to accommodate the student's learning styles.

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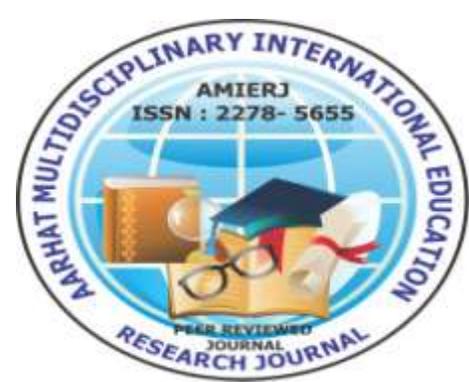
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