

**A STUDY OF HEMISPHERIC DOMINANCE AND MATHEMATICS ACHIEVEMENT
OF Xth STANDARD STUDENTS OF AURANGABAD CITY****Syeda Humera**

Assistant Professor, Marathwada College of Education, Aurangabad (M.S)

Abstract

Present research Aims to study Hemispheric Dominance and Mathematics Achievement of Xth Standard Students of Aurangabad City. The sample of the study was selected by Stratified Random Sampling method which includes 150 Xth std students of Aurangabad City. Tool used for the research was SOLAT (Styles of Learning and Thinking) developed by Dr.Venkataraman. For Maths achievement scores of SSC exam were considered. Research finding reveals that majority of the students have right hemispheric dominant style of learning and thinking. No Significant difference was found between Mathematics achievement of students with respect to different hemispheric dominant style of learning and thinking. No Significant difference was found between Mathematics achievement of Girls and Boys.

Key words: SOLAT ,Styles of Learning and Thinking , Mathematics achievement , Hemispheric brain dominance , Xth Standard Students.

Introduction: In modern world, mathematics is being increasingly used in sciences, technologies, social science, education etc. With the use of computer and other devices there is a more emphasis in the mathematics. Though the world is more mathematically inclined, the majority of students in school feel it as more abstract. Though the teacher can teach it with the help of modern educational technological devices and more advanced effective methods of teaching, there is a poor performance of the students in the mathematics. Hence, there must be some factors like psychological, social and biographical affecting the learner in learning of mathematics at large. In a study considering the factors of achievement in mathematics, one possibly ignores those aspects in which individuals differ from one another. The starting point may be achievement in mathematics itself where wide ranging variations occur from the point of

non-performance to the point of outstanding achievement in it. The question arises why such a difference in achievement appears when the school provides more or less uniform instructional and environmental facilities? Is this difference due to certain factors? Does this difference depend upon their style of learning thinking?

“Styles depend upon cerebral dominance of an individual in retaining & processing different modes of information in his own style of learning and thinking. Style indicates the hemispheric function of the brain and students learning strategy and information processing are based on the preferences of the brain area “.

(Venkataraman 1990).

Hemisphericity is the cerebral dominance of an individual in retaining and processing modes of information on his/her own style of learning and thinking.

(Raina, 1984).

Brain hemisphericity is the tendency of an individual to process information through the left hemisphere or the right hemisphere or in combination (Bradshaw & Nettleton, 1981; McCarthy, 1996; Springer & Deutsch, 1993). Research has demonstrated that the left hemisphere operates in a linear, sequential manner with logical, analytical, propositional thought. On the other hand, the right hemisphere operates in a nonlinear, simultaneous fashion and deals with non-verbal information as well as dreams and fantasy (Iaccino, 1993; McCarthy, 1996; Oxford, 1996; Oxford, Ehrman, & Lavine, 1991; Springer & Deutsch, 1993; Torrance, 1988).

Researches conducted during the last two decades have shown that the human left cerebral hemisphere is to be specialized for primarily verbal, analytical, abstract, temporal and digital operations (Bogen, 1989; Gazzaniga, 1990; Fitzgerald & Hattie, 1993). The same investigations revealed that the right cerebral hemisphere is to be specialized for primarily non-verbal holistic, concrete, creative, analogical and aesthetic functions.

Individuals differ in their style of learning and thinking. In academic institutions, learning and teaching processes are mismatched. Teaching and thinking styles of the teachers and learning and thinking styles of students differ because learning differences are not tied up to the understanding and thinking abilities of students. The differences in preference of the two hemispheres for information processing have been referred to as styles of learning and thinking (SOLAT) by Torrance. The styles of learning and thinking are as important as levels of ability and we ignore to identify and develop them in students at an early and appropriate stage. Styles

are propensities rather than abilities. They are the ways of directing the intellect which an individual finds comfortable.

Mathematics is a prime factor in nation's development .We can help the nation by improving mathematics achievement and creating interest for mathematics. It is foremost important for the teacher to focus their attention on student's favored thinking style before imparting the subject matter .if they fail to do so; the consequences may be serious, because the teachers may tend to confuse styles of students mind. If mismatch exist between the Preferred style of teacher and that of students ,such students are frequently seen to uninterested in the in content ,feel bored and reject the learning activity .therefore it is important for the teacher to know the students preferred styles so that the teacher can capitalize the opportunity for students learning. Mathematics involves problem solving and different brain processing skills, Thus style of learning and thinking may be related to mathematics achievement. By identifying students learning style a teacher may adopt suitable teaching style to suit the learning style of students. As Std X is the crucial stage of a student's academic life it is a turning point of a student's career which compels him to choose career preference so by identifying students learning style, a suitable teaching strategy may be adopted to improve his achievement in mathematics so the researcher is interested to study the mathematics achievement of students with preferred hemispheric dominance.

Objectives Of The Study:

1. To find the hemispheric dominance of students.
2. To compare the Mathematics achievement of students with respect to different hemispheric dominant style of learning and thinking.
3. To compare the Mathematics achievement of Girls and Boys.

Hypotheses Of The Study:

1. Majority of the students have right hemispheric dominant style of learning and thinking.
2. There is no significant difference between Mathematics achievement of student with respect to different hemispheric dominant style of learning and thinking.
3. There is no significant difference between the Mathematics achievement of Girls and Boys.

Methodology:

Method: Survey method of research was employed to study hemispheric dominant Style of Learning and Thinking of Students of Aurangabad city.

Sample: A sample of 150 Xth std students, (75 boys+ 75 girls) was selected by Stratified Random Sampling method.

Tools: SOLAT (Styles of Learning and Thinking) developed by Venkataraman (1994) was used in the present study. It is a modified version of the tool developed by Torrance. It identifies hemispheric dominance by way of studying the hemisphere functions. It indicates the learning and thinking styles and brain hemisphere preference. For Mathematics achievement the score obtained by students in math subject in SSC exam conducted by Maharashtra State Board (March 2014) were considered as Mathematics Achievement.

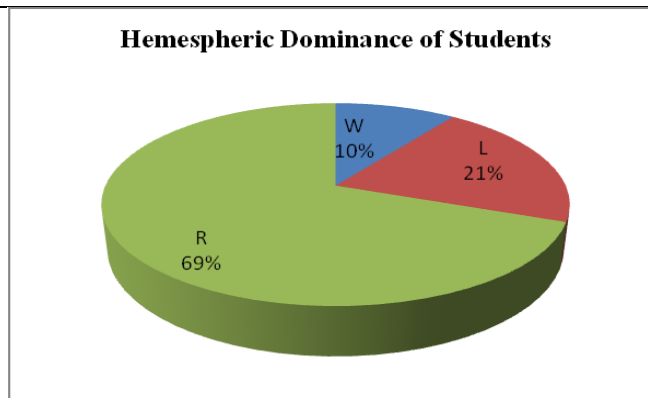
Statistical Analysis: Percentage, Mean, SD, and t-test, ANOVA were used to analyze the data.

ANALYSIS AND INTERPRETATION OF RESULTS

Hypothesis 1: Majority of the students have right hemispheric dominant style of learning and thinking.

Table 1- Showing hemispheric dominant style of learning and thinking.

Students	Right		Left		Whole(Integrated)	
	N	%	N	%	N	%
Girls=75	51	68	15	20	09	12
Boys=75	53	71	16	21	06	08
Total =150	104	(69%)	31	(21%)	15	(10%)



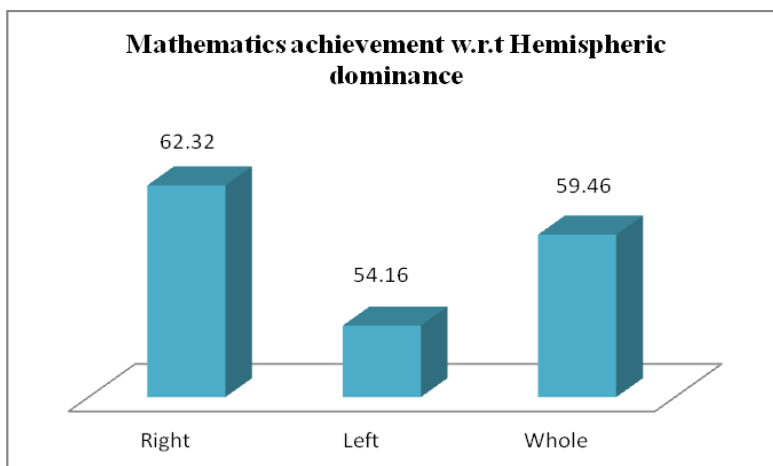
It is inferred from the table 1 that 68 % Girls and & 71 % boys have right brain dominance. Similarly 69 % of students have right hemispheric dominant style of learning and thinking. Hence majority of the students have right hemispheric dominant style of learning and thinking.

Hypothesis 2: There is no significant difference between Mathematics achievement of students with respect to different hemispheric dominant style of learning and thinking.

Table 2- Showing comparison of the Mathematics achievement of students with respect to different hemispheric dominant style of learning and thinking

Hemispheric dominance	N	Mean	Std. Deviation	Std. Error	Df	Calculated F value	Table value	Remarks
Right	104	62.32	18.61	1.82	(2,147)	2.270	3.06	Not Significant
Left	31	54.16	20.09	3.60				
Whole	15	59.46	17.25	4.45				

Critical value of F at 0.05 level=3.06

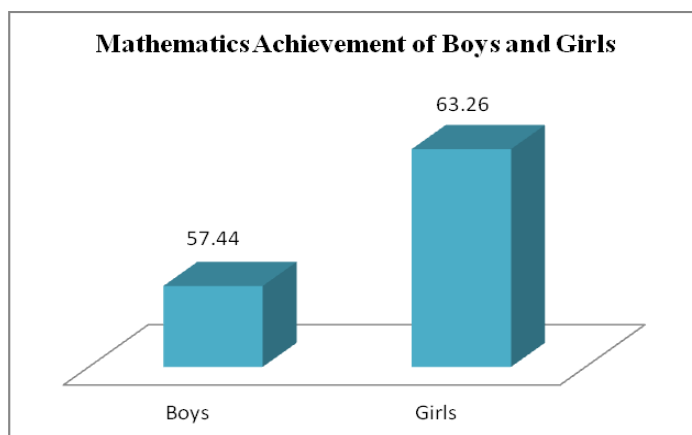


It is inferred from the above table 2 that Calculated F ratio value 2.27 is less than 3.06 (table value at 0.05 level), therefore there is no significant difference between Mathematics achievement of students with respect to different hemispheric dominant style of learning and thinking

Hypothesis 3: There is no significant difference between Mathematics achievement of Girls and Boys.

Table 3- Showing comparison of the Mathematics achievement of Girls and Boys.

Gender	N	Mean	S.D	t value	Difference between Means	
Boys	75	57.44	18.06	1.89	Not Significant	0.05 level significance = 1.97
Girls	75	63.26	19.50			



From table 3 ,the obtained t values 1.89 is less than 1.97 showing insignificant difference between Mathematics achievement of Girls and Boys.

Findings: Research finding reveals that majority of the students have right hemispheric dominant style of learning and thinking. No Significant difference was between Mathematics achievement of students with respect to different hemispheric dominant style of learning and thinking. No Significant difference was between Mathematics achievement of Girls and Boys.

Conclusion:

To conclude it is essential to identify the styles of learning and thinking of children in order to facilitate the process of learning and teaching. The present study has dealt with math achievement and learning-thinking style, the findings of the study are likely to prone of importance to educational secondary school students, teacher educators and policy makers who are concerned with the sphere of education. One of the implications of the present conclusion for teacher educators and policy makers is that their curricula, syllabi, text book, method of teaching etc. all should be modeled in such a fashion that they can utilize their energies in the right direction. It is therefore most important for student teacher to develop the academic achievement to become a perfect teacher.

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