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STYLES OF LEARNING AND THINKING OF TEACHER TRAINEES IN RELATION TO GENDER AND ACADEMIC STREAM: A COMPARATIVE STUDY

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ABSTRACT

The present study aimed to assess the styles of learning and thinking of male and female with respect to academic stream of secondary teacher trainees. The investigator used the descriptive survey method to serve the purpose of the study. Style of learning and thinking questionnaire (SOLAT) developed and standardized by Dr.D.Venakataraman was used to assess the three types of hemispheric of 200 secondary teacher trainees, for which statistical hypotheses were framed and tested through t-test. The findings were: Male and female teacher trainees differ significantly on left hemisphere style of learning and thinking. Male and female teacher trainees of Arts stream differs significantly on Whole, Left hemisphere style of learning and thinking. Although male and female teacher trainees do not differs significantly on whole and right hemisphere style of learning and thinking. Male and female teacher trainees of Arts stream do not differs significantly on right hemisphere style of learning and thinking. Whereas, male and female teacher trainees of Science and Commerce stream do not differs significantly on whole, right and left hemisphere style of learning and thinking.

INTRODUCTION

Teaching and thinking style of the teachers and learning and thinking style of the students differ because learning differences are not tied up to the understanding and thinking ability of the students. Many educators are still perplexed about the styles of students of learning and thinking process, what effect these styles have on children's performance in schools, and why attention should be given to children's performance to assess their levels of ability. The students, at their stage, it is very difficult to understand their psychology. Most of the students deviate from their real goal i.e. Academic subjects. So, it is the responsibility of the teachers and the parents to perceive the teacher trainees natural abilities and tendencies, how they think, act and learn in different ways and in different situations. This is due to the individual differences in their style of learning and thinking, other cognitive abilities like intelligence, interest and so on. In last three decades, a number of researchers, psychologists and educationists have realized that if style of learning and thinking of students are made on the basis of grouping of the students and the selection of instructional procedures and strategies, learning and retention can be enhanced to an appropriate degree.

In view of the importance of style of learning and thinking, some researchers got stimulated and undertook studies on style of learning and thinking. They found that individual differences do exist among the learners. Several variables like age, grade, sex, birth order, educational level and stream, race, ethnicity, culture, institution type, environment of the institution, achievement, matching and mismatching teaching style etc. have been investigated in context of style of learning and thinking. Hemisphericity is the cerebral

dominance of an individual in retaining and processing modes of information in his own style of learning and thinking **(Venkataraman 1989, Raina 1984)**. Researchers conducted during the last two decades have showed that the human left cerebral hemisphere is to be specialized for primarily verbal, analytical, abstract, temporal and digital operations **(Bogen, 1969, Gazzaniga, 1970, Ornstein, 1972)**. A review of the related studies shows that style of learning and thinking of the learners are effected by many factors but in varied degree by large, the result of studies have been equivocal.

It is therefore, important for the parents and the teachers to understand the nature of student's mind and its functions in different styles of learning and thinking. Style indicates the hemispheric functions of the brain. Hemisphericity is the individual's brain capacity in acquiring and processing different modes of information in its own style of learning and thinking. The hemispheres, both right and left, perform different functions through different modes. In this study, an effort has been made to understand the style of learning and thinking in relation to gender and academic stream.

So far the trend of Indian research is concerned, only a few studies can be referred on style of learning and thinking. However, no researcher in Indian has attempted to examine the differences in style of learning and thinking of teacher trainees in relation to their gender and academic stream. The present study focused upon the following quarries to seek the meaningful answers:

1. Does gender and academic stream jointly produces the differences in the style of learning and thinking of secondary teacher trainees?
2. Does gender affect the style of learning and thinking of secondary teacher trainees?
3. Does academic stream generate differences in style of learning and thinking of secondary teacher trainees?

In order to arrive at the solution of the above research questions, the investigator selected and designed the present study.

OBJECTIVES OF THE STUDY

1) To compare the differences in various dimension of style of learning and thinking among male and female secondary teacher trainees.
2) To compare the differences in various dimension of style of learning and thinking among arts stream male and female secondary teacher trainees.
3) To compare the differences in various dimensions of style of learning and thinking among science stream male and female secondary teacher trainees.
4) To compare the differences in various dimensions of style of learning and thinking among commerce stream male and female secondary teacher trainees. I

HYPOTHESES OF THE STUDY

1. There is no significant difference in mean scores of various dimensions of Style of learning and thinking among male and female teacher trainees.
2. There is no significant difference in mean scores of various dimension of style of learning and thinking among arts stream male and female secondary teacher trainees.
3. There is no significant difference in mean scores of various dimensions of style of learning and thinking among science stream male and female secondary teacher trainees.

4. There is no significant difference in mean scores of various dimensions of style of learning and thinking among commerce stream male and female secondary teacher trainees.

DESIGN OF THE STUDY

The present investigation concern with the style of learning and thinking of teacher trainees in relation to their gender and academic stream, the investigator used the descriptive survey method to serve the purpose of the study.

SAMPLE

In order to achieve the objectives of the present study, a sample of 200 secondary teacher trainees were selected from seven Colleges of Education in District Hamirpur of Himachal Pradesh on the basis of purposive random sampling technique.

TOOLS USED

Keeping in view the objectives and hypotheses of the study, only one tool was used i.e. Style of Learning and Thinking Developed and Standardized by Dr. D. Venkataraman (1990).

STATISTICAL TECHNIQUES USED

In order to compare the styles of learning and thinking of male and female secondary teacher trainees in relation to academic stream, the obtained data was analysed through t-test.

RESULTS

TABLE- 1

Significance of differences in mean scores of various dimensions of style of learning and thinking among male and female teacher trainees

Dimensions		Mean	S.D	SEd	t-ratio	Level of significance
Whole Hemisphere	**Male N_1=82**	4.79	4.41	0.58	1.17	Not significant
	Female N_2=118	4.11	3.36			
Right Hemisphere	**Male**	29.04	6.14	0.82	1.80	Not significant
	Female	27.56	5.12			
Left Hemisphere	**Male**	16.17	6.35	0.9	2.23	Significant
	Female	18.18	6.12			

The calculated t-value (1.17) is not significant at 0.01 level of significance with df/198.It means that the male and female teacher trainees do not differs significantly on whole or integrated hemisphere style of learning and thinking. So, null hypothesis No 1 (a) that there is no significant difference in the mean scores of whole hemisphere of style of learning and thinking of male and female teacher trainees is retained.

Further reveals from table 1 that the calculated t-value (1.80) is not significant at 0.01 level of significance with df/198.It suggests that the male and female teacher trainees do not differ significantly on right hemisphere style of learning and thinking. Hence, null hypothesis No 1 (b) that there is no significant difference in the mean scores of right hemisphere of style of learning and thinking of male and female teacher trainees is retained.

It can be seen from table 1 that the obtained t-value (2.23) is significant at 0.05 level of significance with df/198.It means that the male and female teacher trainees differs

significantly on left hemisphere style of learning and thinking. Further, female teacher trainees posses better language, speech, learning, analytical thinking and empirical study than the male teacher trainees. So, null hypothesis No 1(c) that there is significant difference in the mean scores of left hemisphere of style of learning and thinking of male and female teacher trainees is not retained.

Fig. 1

Showing the bar graph on mean scores of male and female teacher trainees on left hemisphere style of learning and thinking

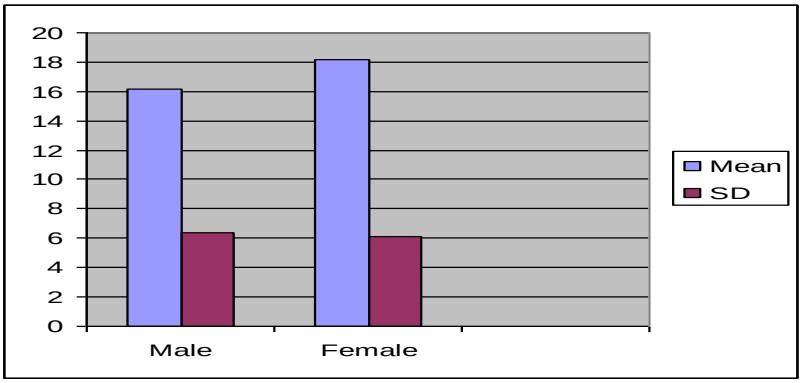

TABLE-2

Significance differences in mean scores of various dimensions of style of learning and thinking among male and female teacher trainees with respect to arts stream

ARTS						
Dimensions		**Mean**	**S.D**	**SEd**	**t-ratio**	**Level of Significance**
Whole Hemisphere	**Male N_1=43**	4.91	4.37	0.72	2.65	Significant
	Female N_2=55	3	2.14			
Right Hemisphere	**Male**	29.37	6.67	1.26	1.49	Not significant
	Female	27.49	5.61			
Left Hemisphere	**Male**	15.72	7.18	1.35	2.81	Significant
	Female	19.51	5.88			

It can be observed from table 2 that the mean scores of male and female in whole or integrated hemisphere of SOLAT are 4.91 and 3 with corresponding S.D. are 4.37 and 2.14 respectively. The calculated t-value (2.65) is significant at 0.01 level of significance with df/96. It means that the male and female teacher trainees do differs significantly on whole or integrated style of learning and thinking. So, null hypothesis No 2 (a) that there is no significant difference in the mean scores of Whole hemisphere of style of learning and thinking of male and female teacher trainees in Arts stream is not retained.

Further reveals from table 2 that the mean scores of male and female in right hemisphere of SOLAT are 29.37 and 27.49 with corresponding S.D. are 6.67 and 5.61 respectively. The calculated t-value (1.49) is not significant at 0.01 level of significance with df/96.It means that the male and female teacher trainees do not differs significantly on right hemisphere style of learning and thinking. Hence, null hypothesis No 2 (b) that there is no significant difference in the mean scores of right hemisphere of style of learning and thinking of male and female teacher trainees in Arts stream is retained.

It can be seen from table 2 that the mean scores of male and female in left hemisphere of SOLAT are 15.72 and 19.51 with corresponding S.D. are 7.18 and 5.88 respectively. The calculated t-value (2.81) is significant at 0.01 level of significance with df/96.It means that the male and female teacher trainees differs significantly on left hemisphere style of learning and thinking. Further, female teacher trainees posses better language, speech, learning, analytical thinking and empirical study than the male teacher trainees. So, null hypothesis No 2(c) that there is no significant difference in the mean scores of left hemisphere of style of learning and thinking of male and female teacher trainees in Arts stream is not retained.

Fig.2

Showing the bar graph on mean scores of whole hemisphere of style of learning and thinking among male and female teacher trainees with respect to arts stream

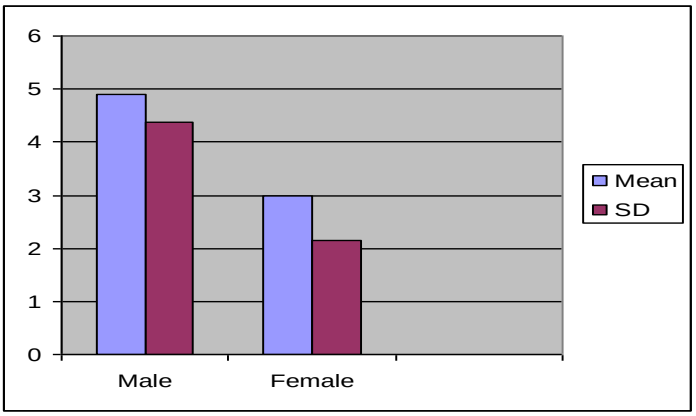

Fig.3

Showing the bar graph on mean scores of left hemisphere of style of learning and thinking among male and female teacher trainees with respect to arts stream

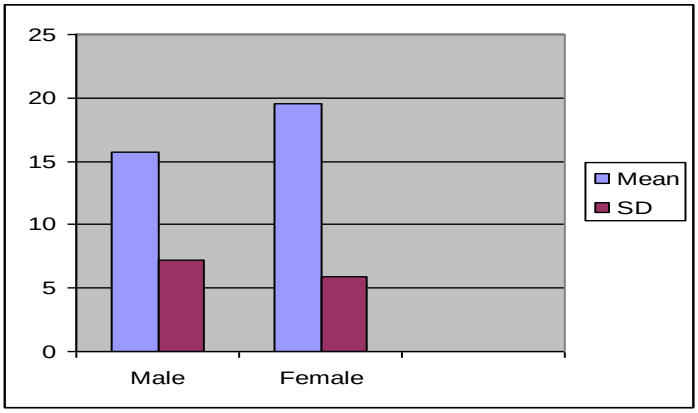

TABLE-3

Significance differences in mean scores of various dimensions of style of learning and thinking among male and female teacher trainees with respect to science stream

SCIENCE						
Dimensions		**Mean**	**S.D**	**SEd**	**t-ratio**	**Level of Significance**
Whole Hemisphere	**Male N_1=24**	4.04	4.34	1.11	1.04	Not significant
	Female N_2=37	5.19	4.02			
Right	**Male**	28.88	5.39			

Hemisphere	**Female**	27.95	5.10	1.38	0.67	Not significant
Left Hemisphere	**Male**	17.08	5.33			
	Female	16.86	6.09	1.48	0.15	Not Significant

It can be observed from table 3 that the mean scores of male and female in whole or integrated hemisphere of SOLAT are 4.04 and 5.19 with corresponding S.D. are 4.34 and 4.02 respectively. The calculated t-value (1.04) is not significant at 0.01 level of significance with df/59.It means that the male and female teacher trainees do not differs significantly on whole or integrated hemisphere style of learning and thinking. So, null hypothesis No 3 (a) that there is no significant difference in the mean scores of whole hemisphere of style of learning and thinking of male and female teacher trainees in Science stream is retained.

Further reveals from table 3 that the mean scores of male and female in right hemisphere of SOLAT are 28.88 and 27.95 with corresponding S.D. are 5.39 and 5.10 respectively. The calculated t-value (0.67) is not significant at 0.01 level of significance with df/59.it suggests that the male and female teacher trainees do not differs significantly on right hemisphere style of learning and thinking. So, null hypothesis No 3 (b) that there is no significant difference in the mean scores of right hemisphere of style of learning and thinking of male and female teacher trainees in Science stream is retained.

It can be seen from table 3 that the mean scores of male and female in left hemisphere of SOLAT are 17.08 and 16.86 with corresponding S.D. are 5.33 and 6.09 respectively. The calculated t-value (0.15) is not significant at o.o1 level of significance with df/59.It means that the male and female teacher trainees do not differs significantly on left hemisphere style of learning and thinking. Hence, null hypothesis No 3 (c) that there is no significant difference in the mean scores of left hemisphere of style of learning and thinking of male and female teacher trainees in Science stream is retained.

TABLE- 4

Significance of differences in mean scores of various dimensions of style of learning and thinking among male and female teacher trainees with respect to commerce stream

COMMERCE						
Dimensions		**Mean**	**S.D**	**SEd**	**t-ratio**	**Level of Sig.**
Whole Hemisphere	**Male N_1=15**	5.67	4.40			
	Female N_2=26	4.92	3.69	1.35	0.55	NS
Right Hemisphere	**Male**	28.33	5.59			NS
	Female	27.15	5.28	1.77	0.67	
Left Hemisphere	**Male**	16	5.01			NS
	Female	17.62	5.77	1.72	0.94	

It can be observed from table 4 that the calculated t-value (0.55) is not significant at 0.01 level of significance with df/39. It suggests that the male and female teacher trainees do not differs significantly on whole hemisphere style of learning and thinking. So, null hypothesis No 4 (a) that there is no significant difference in the mean scores of whole hemisphere of style of learning and thinking of male and female teacher trainees in Commerce stream is retained.

Further reveals from table 4 that the calculated t-value (0.67) is not significant at 0.01 level of significance with df/39.It means that the male and female teacher trainees do not differ significantly on right hemisphere style of learning and thinking. Hence, null hypothesis No 4

(b) that there is no significant difference in the mean scores of right hemisphere of style of learning and thinking of male and female teacher trainees in Commerce stream is retained.

It can be seen from table 4 that the calculated t-value (0.94) is not significant at 0.01 level of significance with df/39.It means that the Male and Female Teacher Trainees do not differs significantly on left hemisphere style of learning and thinking. So, null hypothesis No 4 (c) that there is no significant difference in the mean scores of left hemisphere of style of learning and thinking of male and female teacher trainees in Commerce stream is retained.

DISCUSSION OF THE RESULTS

In lieu of the main findings of the present study it was hypothesized that there exists no significant difference in the mean scores of various dimensions of learning and thinking style among male and female secondary teacher trainees. After analysis and interpretation of the data it was found that the data does not support the assumption and the researcher was forced to reject the hypothesis. The study depicts that the mean scores of left dimension of female teacher trainees is higher than the male teacher trainees. It may be due to the fact that they posses better language, speech, learning, analytical thinking and empirical study than the male teacher trainees. **Edwards (1979),** found that a person with left hemispheric style is more rational and a person with right hemispheric style is more emotional.

It was hypothesized that there exists no significant difference in the mean scores of various dimensions of learning and thinking style among male and female teacher trainees in Arts stream. After analysis and interpretation of the data it was found that the data does not support the assumption and the researcher was forced to reject the hypothesis. The study depicts that the mean scores of whole dimension of male teacher trainees is higher than the female teacher trainees. It may be due to the fact that they are more logical and practical, more interested in game and sports. **Soliman (1989),** reported that males scored significantly higher than females on the right hemisphere style. Further, males scored significantly higher than females on the left hemisphere style. Also, females scored significantly higher than males on the integrated style of thinking

It was found that the mean scores of left dimension of female are higher than the male secondary teacher trainees. It may be due to the fact that they posses better language, speech, learning, analytical thinking and empirical study than the male teacher trainees. **Edwards (1979),** found that a person with left hemispheric style is more rational and a person with right hemispheric style is more emotional.

EDUCATIONAL IMPLICATIONS

The most outstanding characteristics of any research are that it must contribute something new to the development of the area concerned. Every study has its utility or implication in some or the other area. The present study has wider implications for teachers and students. It has been found that there is no significant difference in style of learning and thinking of male and female teacher trainees. Therefore, it is suggested that the teachers should frame proper teaching and know the perception learning strategy according to the levels of the students. It has been found that there is no significant difference between left brain and whole brain areas of learning and thinking of teacher trainees. Strategies should be developed to cater to these areas of brain. It has also been found that there exists significant difference among left brain and whole brain areas of style of learning and thinking of teacher trainees. So, teacher should also develop proper strategies to cultivate the above mentioned areas of brain to develop proper learning and thinking style. Students may be aware regarding the importance of learning and thinking styles. Students may be provided training for diagnosing their own

styles and capitalize on their strength of learning and thinking styles. Curriculum designer may take into consideration various learning styles at the time of curriculum framing. The study is important to know the perception of secondary teacher trainees on their learning and thinking styles in relation to gender and academic stream. The research at hand has paramount role in finding the difficulties and problem encountered by teacher trainees in relation to gender and academic stream.

REFERENCES

1. Aggarwal J.C. (1983). A Comparative Study of Learning Styles of High and Low Creative Students Belonging to Different Types of Instructions. Unpublished Ph. D. Thesis, Meerut University.
2. Antoinette et al., (2005). Style of Learning and Thinking (SOLAT) questionnaire: Psychometric data, validation and standardization of the Italian version. Testing-Methodologies-Psychometric. v12. 299 - 316.
3. Boyatzis, R. E. Kolb, D. A. & Mainemelis, C. (2000). Experiential Learning Theory Perspectives on Cognitive, Learning, and Thinking Styles. http://michaelhanley.ie/elearningcurve/tag/learning-styles.
4. Brew, C.R. (2002). Kolb Learning Style Instrument Sensitive to Gender.Psychological abstract, 2002 vol. 89.
5. George, M.A. And Pinto, J. K. (1991). Changes in Learning Styles Preferences during three years long Study. Psychological Report. 69, p. 755-762.
6. Grass, J.A. (1988). Learning Styles of Artistically Talented High School Students. Dissertation Abstract International, 1981, Vol.41,No.11, 4677-A.
7. Grigorenko, E.L. And Strenberg, (1997). Styles of Thinking, Ability and Academic Performances. Exceptional Children vol. 63(3), 295- 313.
8. Knew, Lee Benson (1991). Effect of Cerebral Hemisphericity on Sentence Picture Verification Reaction Times and Preference for Picture or Verbal Imaging Strategy. Dissertation Abstracts International, vol.52, No. 4, Oct., p.2330- B.
9. Saleh, A.I. (1997). A Study of Brain Hemisphericity, Personality Types, Temperament Ys, Learning Styles, Learning Strategies, Majors and Cultures DAI, vol. 58(8), 3004-A.
10. Singh, A.K. (1987). Learning Styles of Advantaged and Disadvantaged High School Students in Relation to Their Academic Achievement. Unpublished Ph. D. Thesis, Banaras Hindu University.
11. Sonley, J.D. (1987). An Examination of Students Learning Styles and Learning Modalities on Problem Solving Success. Dissertation Abstract International, 1988, Vol.48, No.8, 2028-A.
12. Sodhi, G.S. And Gill, T.K. (1992). Modification of Styles of Learning and Thinking Through Strategies. Trends in Education. Vol. XXIV. No. 2 p -30 -40.
13. Suresh, V. (1990). Hemispheric Information Processing and Achievement Motivation. Indian Journal of Applied Psychology. vol. 27(2), p -199 -120.
14. Venkataraman D. (1990). SOLAT (Style of Learning and Thinking), PSY COM Services, New Delhi.

15. Venkataraman, D. (1997). The Brain behind the Behavior. The Hindu (Madurai).

16. Verma, B.P. (1994). Hemisphericity and Learning, Styles among Students of Distance Education. Indian Journal of Education Psycholometery and Education, vol. 25(1&2) 53-60.