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A study of brain hemisphericity in relation to multiple intelligence among government senior secondary school students in Jind District

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Abstract
The purpose of the present study was to investigate the brain hemisphericity of Govt. senior secondary school students in relation to multiple intelligence. Survey method was used for data collection. A sample of 100 students of Govt. senior secondary School JIND District. The investigators used SOLAT Test developed by D. Venkataraman, and multiple intelligence inventory by Dr. Arpita Kacker &Alisha Juneja. The data was analyzed statistically by using mean, S.D, t-test and correlation. The study revealed that there is significant difference in the Brain Hemisphericity of Female students and Males students of Govt. Senior Secondary School in Jind District.

Introduction
In the subject of education, the brain plays a significant part in the learning and thinking process. The brain is elastic and adaptable to new experiences. Teaching was a simpler art in the previous century, and education was not available to everyone owing to a variety of circumstances. Today, the Universal Declaration of Human Rights (Article 26) implies that all people (girls, intelligent people, and people with disabilities) are equally entitled to a place in our classrooms, regardless of their socioeconomic status.
Students in today's classroom have a wide range of abilities, family backgrounds, and learning requirements. In addition, while taking into consideration globalisation and the rapid advancement of technology, the educational system should assist each student in realising their full potential. It is necessary for the educational system to implement research findings from diverse domains such as neuroscience (Brain and its functioning), pedagogy (individual education and learning), and educational psychology in order to create curriculum, learning, and teaching methodologies (Mind and behaviour of students).

Operational Definition of the Key Terms
Brain Hemisphericity
This relates to the students' inclinations for learning, thinking, and processing information using the right, left, integrated, and mixed brain modes. It is the dominance of brain hemisphericity in activating various information and personality traits.

Multiple Intelligence
Language intelligence, visual intelligence, reasoning intelligence, creativity intelligence, social intelligence, musical

intelligence, emotional intelligence, naturalistic intelligence, value oriented intelligence, artistic intelligence, mechanical intelligence, sports intelligence, and computer intelligence are examples of inborn and developed cognitive, affective, and psychomotor intelligences.

Need for the study
The brain's chambers are where learning and thinking take place. Each child should have the opportunity to learn in ways that are compatible with their own brain. The brain is divided into two hemispheres, which are joined by the corpus callosum, a thick band of nerve fibres that transmits messages back and forth between them. When the brain is required to execute functions such as learning a new skill, solving a problem, or executing a task, or when it is stressed, the brain may go on auto-pilot and reach for the dominant side of the hemisphere to perform it. Our supremacy is a preference, not a need. Every brain is structured differently (Caine and Caine 1997). For optimum learning potential, educational systems should develop each student's talents and preferences in accordance with their individual brain.

According to Dr. Gardner, our schools and culture place a greater emphasis on linguistic and logical-mathematical intelligences. Unfortunately, many students with talents in other intelligences, such as painters, architects, musicians, naturalists, designers, and dancers, may not receive adequate support in school and are branded as "learning handicapped," "ADD (Attention deficit disorder)," or "under achievers." The multiple intelligences idea advocates a significant change in the current educational system. As a result, the current study stresses its significance based on the mentioned points of view.

Objectives of the study
1. To study the relationship between Brain Hemisphericity and Multiple Intelligence of Govt. Senior Secondary male Student.
2. To study the relationship between Brain Hemisphericity and multiple Intelligence of Govt. Senior Secondary female Student.
3. To compare the Brain Hemisphericity of Govt. Senior Secondary female and male students.
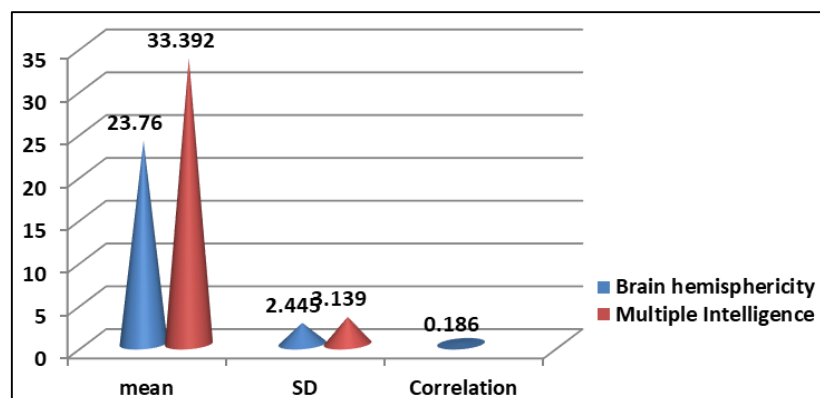4. To compare the multiple Intelligence of Govt. Senior Secondary female and male students.

5. To study the inter correlations among Brain Hemisphericity, Multiple Intelligence of Govt. Senior Secondary students.

Hypotheses of the study
1. There will be no significant relationship between Brain Hemisphericity and Multiple Intelligence of Govt. Senior Secondary male students.
2. There will be no significant relationship between Brain Hemisphericity and Multiple Intelligence of Govt. Senior Secondary female students.
3. There exists no significant difference between the Brain Hemisphericity of Govt. Senior Secondary male and female students.
4. There exists no significant difference between the Multiple Intelligence of Govt. Senior Secondary male and female students.
5. There will be no significant inter correlations among Brain Hemisphericity, and Multiple Intelligence of Govt. Senior Secondary students.

Method Used: survey method is used by the investigators for collecting the data.

Sampling: sample is fundamental to conduct of research and interpretation of its result. The researchers selected 100 students, (50 males, 50 females) from Different Govt. Sr. Sec. Schools Jind District, by stratified random sampling method.

Variables of the Study
The following variable will be used for the present study:
▪ **Independent Variable:** Brain Hemisphericity
▪ **Dependent variable:** multiple intelligence

Tools to be used
A. SOLAT questionnaire by D. Venkataraman (2011).
B. Multiple Intelligence inventory by Dr. Arpita Kacker &Alisha Juneja (2021).

Statistical Techniques
For the purpose of statistical analysis of data following statistical techniques will be used Descriptive statistics: mean and standard deviation, Inferential Statistics: t-test, correlation.

Analysis and Interpretation of data
1. To study the relationship between Brain Hemisphericity and Multiple Intelligence of Govt. Senior Secondary male students.

Fig 1

Table 1: Mean, SD. and correlation of Brain Hemisphericity score of Govt. Senior Secondary male students with relation to multiple intelligence

Variable	No of individual	Mean	SD	Correlation	Level of significant	Remarks
Brain Hemisphericity	50	21.921	1.945	0.053299	0.05	No significant
Multiple Intelligence	50	33.568	3.479			

Table 1 show that the mean score of Brain Hemisphericity of males is 21.921 while mean score of Multiple Intelligence of males is 33.568, the obtained correlation value is 0.053 which is not significant at 0.05 level of significance. Thus the null hypothesis "there is no significant difference in the Brain Hemisphericity of males of Govt. senior secondary school with relation to Multiple Intelligence" is accepted.

2. To study the relationship between Brain Hemisphericity and Multiple Intelligence of Govt. Senior Secondary female students

Table 2: Mean, SD. and correlation of Brain Hemisphericity score of Govt. Senior Secondary female students with relation to Multiple Intelligence

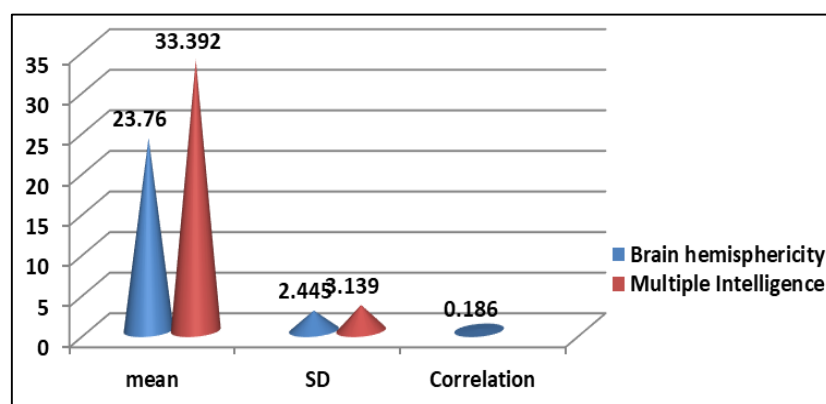| Variable	No of individual	Mean	SD	Correlation	Level of significant	Remarks
Brain Hemisphericity	50	23.764	2.44	0.186	0.05	No significant
Multiple Intelligence	50	33.392	3.139			

Fig 2

Table 2 show that the mean score of General Well Being of girls is 165.92 while mean score of learning outcomes of females is 335.21, the obtain correlation value is 0.222 which is not significant at 0.05 level of significance. Thus the null hypothesis "there is no significant difference in the General Well Being of females of Govt. senior secondary school with relation to learning outcomes" is accepted.

3. To compare the Brain Hemisphericity of Senior Secondary female and male students
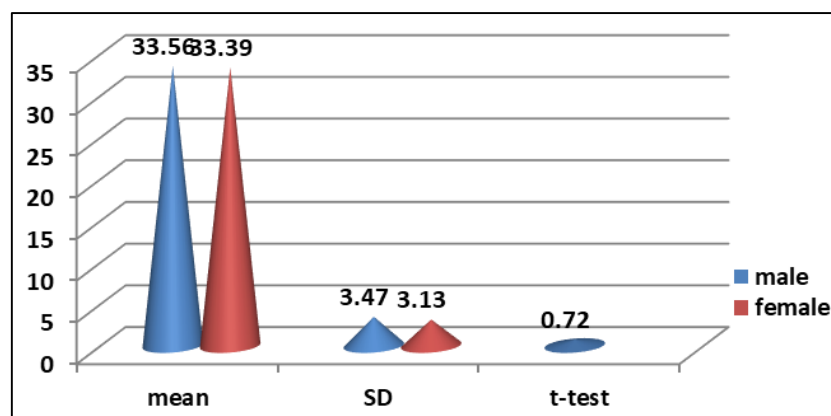
Fig 3

Table 3: Mean, SD. and 't' value of Brain Hemisphericity score of Govt. Senior Secondary female and male Students

Gender	No of individual	Mean	SD	t-ratio	Level of significant	Remarks
Males	50	21.92	1.94	2.292	0.05	significant
Females	50	23.76	2.44			

Table 3 shows that the mean score of Brain Hemisphericity of males is 21.92 while mean score of Brain Hemisphericity of females is 23.76. The obtained 't' value is 2.292 which is significant at 0.05 level of significance. Thus the null hypothesis is rejected "there is significant difference in the Brain Hemisphericity of females and males of Govt. senior secondary school". The investigator found that the gender did differ significantly in Brain Hemisphericity.

4. To compare the Multiple Intelligence of Govt. Senior Secondary female and male students

Table 4: Mean, SD and 't' value of Multiple Intelligence score of Govt. Senior Secondary female and male Students

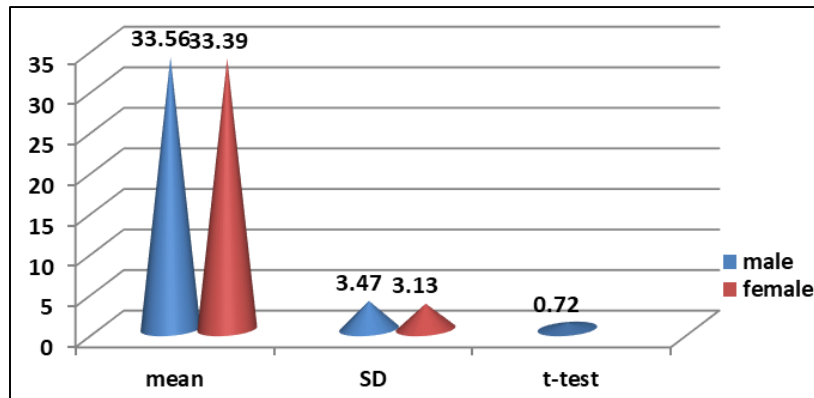| Gender	No of individual	Mean	SD	t-ratio	Level of significant	Remarks
Males	50	33.56	3.47	0.720	0.05	No Significant
Females	50	33.39	3.13			

Fig 4

Table 4 shows that the mean score of Multiple Intelligence of males is 33.56 while mean score of Multiple Intelligence of females is 33.39. The obtained 't' value is 0.720 which is not significant at 0.05 level of significance. Thus the null hypothesis "there is no significant difference in the Multiple Intelligence of Govt. senior secondary male and female students" is accepted.

5. To study the inter correlations among Brain Hemisphericity, and Multiple Intelligence of Govt. Senior Secondary School students

Table 5: Correlation, value of Brain Hemisphericity score of females and males student of Govt. Senior Secondary School with relation to Multiple Intelligence

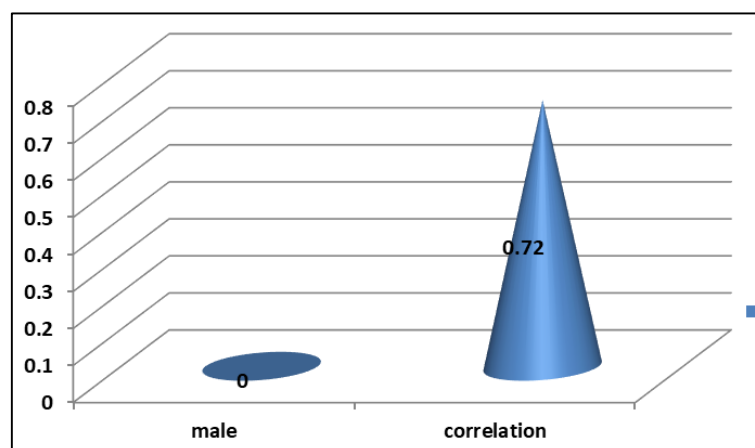| Variable	No of individual	Gender	Correlation	Level of significant	Remarks
Brain Hemisphericity	100	Females, Males	0.101	0.05	Not significant
Multiple Intelligence	100	Females, Males			

Fig 5

Table 5 show that the correlation score Brain Hemisphericity in relation to Multiple Intelligence is 0.101, which is no significant at 0.05 level of significance. Thus the null hypothesis is accepted "there is no significant difference in the Brain Hemisphericity of Govt. senior secondary female and male students with relation to Multiple Intelligence" is accepted. The investigator found that not significantly difference between in to Brain Hemisphericity and Multiple Intelligence in males, and females of Govt. senior secondary school students.

Finding and Conclusion

The present study found that no significant relationship between Brain Hemisphericity and Multiple Intelligence of males. The study found that no significant relationship between Brain Hemisphericity and Multiple Intelligence of females. The study found that significant difference between the Brain Hemisphericity of males and females. The study found that no significant difference between the Multiple Intelligence of female and male students of Govt. Senior Secondary School. Another finding was found that no significant inter correlations among Multiple Intelligence, and Brain Hemisphericity of Govt. Senior Secondary School students.

Education Implications

The present study has valuable implications for educationists, teachers, parents and school authorities. As female score were found to obtain less Multiple Intelligence as compared to males scores and female score were high in Brain Hemisphericity as compared to male's score, the results can be utilized to improve female's Multiple Intelligence and male's improve Brain Hemisphericity. Due attention should be paid on females and males. Teachers can use multiple intelligence in the classroom for the benefit of their students by customizing lessons, classroom layouts and assignments for these multiple intelligences. There is a need to bring change in this system of memorization learning, which can be done by diverting the interest and strengths of the students in the proper direction. If the Brain Hemisphericity and Multiple Intelligence of students get properly managed and put in the right way then their efforts can result in great inventions.

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