Asian Journal of Research № 1-3, 2020 ISSN 2433-202x
IMPACT FACTOR JOURNAL DOI 10.26739/2433-202x
SJIF 6,1 www.journalofresearch.asia
IFS 2,7 info@journalofresearch.asia

THE IMPACT OF LEFT BRAIN DOMINANCE ON SENSING PROBLEM SOLVING SKILL OF HIGHER SECONDARY STUDENTS

Dr. X. VENGO REGIS

Assistant Professor in Pedagogical of Biological Science
EGS Pillay College of Education, Nagapattinam, Tamilnadu, India
e-mail id: trianglevr@gmail.com

http://dx.doi.org/10.37057/2433-202x

Issue DOI http://dx.doi.org/10.37057/2433-202x-209-2020-1-6

Article DOI http://dx.doi.org/10.37057/2433-202x-2020-1-6-32

Abstract: This study mainly focused on the sensing problem-solving skill of left-brain dominant higher secondary students. How the left-brain dominance influenced the sensing problem-solving skill of higher secondary students with respect to gender, standard, location of home and type of schools. The targeted population of the current study was left-brain dominant higher secondary students who were studying XI and XII standards in higher secondary schools in Tirunelveli, Thuthukudi, Kanyakumari and Virudhunagar districts from Tamilnadu, India which consisted of 743 subjects. Left brain dominant students were identified by using the Alert scale of cognitive style designed by Loren D. Crane (1989) and sensing problem-solving skilled students were assessed by using the tool which developed and created by Vengo Regis and Annaraja (2011). The survey method was managed by current study. t-test, ANOVA, and Product-moment correlation were used as statistical techniques. The findings revealed that the level of left brain dominant higher secondary students in their sensing problem-solving skill was moderate and there was no significant difference in left-brain dominant higher secondary students in their sensing problem-solving skill with respect to gender, standard, and location of the home. There was significance difference among government, aided and private schools left-brain dominant higher secondary students in their sensing problem-solving skill and there was no significance difference between left-brain dominance and sensing problem-solving skill of higher secondary students. With this study the researcher concluded by the findings that there was significance in mean scores of sensing problem solving skill of left brain dominant higher secondary students with respect to the type of schools. But other variables like gender, standards and location of home and other variables of sensing problem solving skill of left brain dominant higher students not had the significance contributions in sensing problem solving skill of left brain dominant higher secondary students.

Keywords: Sensing Problem solving skill, Left brain dominance, Higher secondary students.

Introduction

Problem-solving is one of the skills which will be influenced by brain activities. Because the brain plays a vital role as a defence when we really have a problematic situation or solve the puzzles. In this study, the targeted population was the left brain dominant higher secondary students who also in teenagers. In this period the main aim will be facing the public examination by them and academically they have got high pressure to get pass marks with high scores. Because this exam which determined the destiny of the students' life further. In this context how the targeted students use their sensing problem-solving skill to maintain the balance of their higher secondary life along with normal life. Here this study the investigator trying to find out any significant relationship with left-brain dominance and sensing problem-solving skill among students and its background variables respectively.

Significance of the study

Sensing is one of the great phenomena of human beings that give more illusion for solutions to many problems. In general, humans are categorized by many factors based on their nature regarding problem-solving; through sense most of the problems and unpredicted puzzles were solved. In this study, the investigator mainly focuses on the sensing problem-solving skill of the left brain dominant higher secondary students. In their higher secondary school life, how this sensing problem-solving skill utilizes by them and gets solutions for their academic life and also balancing their teenage life. Sensing problem-solving skilled individuals gets sensing by the perception in all external factors like human beings, environments and all; they live the current world and having the sense of here and now and have the unique phenomena of adapting any situation for life where they are in. They are highly interested in physical activities and work out to getting joy. Sensing problem solving skilled individuals having the quality of learning certain things by doing any activities which may be purposeful or insightful and they were interested and acted in keep doing physical activities and workout, they were always being practical and active and so they are always being self-confidence and realistic in their characteristic feature by nature. Left brain dominance is one of the lobes of the human brain which is being unique characteristic features like students who follow the routine work well and to raising more questions in their class while the teaching-learning inside the classroom and also gives to spontaneous answers for questions raised by the teacher in class. While the teaching and learning students often interpreting class and raise many questions to get clear information about that particular subject. Students specifically execute the given task and stipulated goals, in their classroom activities or the documentary work, they choose exact words to make the content superior and they usually have the habit of reading at a separate station. They have an interest in the lecture by listening, more than this they are always like actions which mean result-oriented tasks should eagerly be taken by them. They are not allowing their feelings to control anything on them and keep their study room or their personal room meaningful ways and always set the goals to get perfect achievements with logical arguments and get rational ideas and by nature, they are having very good knowledge in math and science subjects. A turning point in the life of higher secondary students is an achievement in their public examination. Based on the brain dominance of the students' achievement may vary in their subjects separately. Here, the sensing problem-solving skill refers to the inner sense of the students induced by their left-brain dominance. Sensing problems solving skill of the students may act by classroom activities, instruction given by the teachers and also common practices done

by day to day life. The achievement of the students depends upon so many factors; left brain dominance is one of the factors. Moreover, in brain, left brain dominance has been a vital role in speech discrimination and further more in attention control of an individual (Teija Kujala and Elvira Brattico (2009). The left brain dominance is positive, and then they will lead to good achievement. Therefore this study gets importance with higher secondary students. So the investigator selected this unique study.

Title of the study

The impact of left brain dominance on sensing problem solving skill of higher secondary students

Operational definitions of key terms

- By this term the investigator means the knowledge of handling the situation or some problems effectively and find the solution for that problem is called problem solving skill and sensing problem solving skill may have defined as managing practical ways and using innovative methods to find the solution for that problems by their sense.
- By this term the investigator means the left brain dominance, one who uses the extreme level of their left lobe.
- By this term the investigator means the students of XI and XII standards, studying in higher secondary schools of Tirunelveli, Thuthukudi, Kanyakumari and Virudhunagar districts.

Methods and procedures

The impact of left brain dominance on sensing problem-solving skill of higher secondary students was made an attempt as a research study by the investigator in this present study. Left brain dominant students from Tirunelveli, Thuthukudi, Kanyakumari and Virudhunagar districts of Tamilnadu, India were the targeted population for this present study. The survey method was adopted by the investigator which suggested the gathering of left-brain dominant higher secondary students from higher secondary schools of above mentioned districts. The aim of the present study is the impact of left-brain dominance on sensing the problem-solving skill of the students. Problem solving skill inventory developed and prepared by the Vengo Regis and Annaraja (2012) was used by the investigator to collect data of sensing problem solving skilled students. Alert scale of cognitive style designed by Loren d. crane (1989) was used by the investigator in this study to collect the data of left-brain dominant students.

Objectives

1. To find out whether there is any significant difference between left brain dominant male and female students in their sensing problem solving skill.
2. To find out whether there is any significant difference between left brain dominant XI and XII students in their sensing problem solving skill.
3. To find out whether there is any significant difference between left brain dominant rural and urban students in their sensing problem solving skill.
4. To find out whether there is any significant difference among type of school of left brain dominant students in their sensing problem solving skill.

5. To find out whether there is any significant relationship between left brain dominance and sensing problem solving skill of higher secondary students and their sensing problem solving skill.

Hypothesis

1. There is no significant difference between left brain dominant male and female students in their sensing problem solving skill.
2. There is no significant difference between left brain dominant XI and XII students in their sensing problem solving skill.
3. There is no significant difference between left brain dominant rural and urban students in their sensing problem solving skill.
4. There is no significant difference among type of school of left brain dominant students in their sensing problem solving skill.
5. There is no significant relationship between left brain dominance and sensing problem solving skill of higher secondary students and their sensing problem solving skill.

Analysis of data

Objective testing

Table 1: Level of sensing problem solving skill of left brain dominant higher secondary students

Sensing problem solving skill of left brain dominant students					
Low		Moderate		High	
N	%	N	%	N	%
128	17.2	475	63.9	140	18.8

It is inferred from the above table reveals that 17.2 % of the left brain dominant higher secondary students have low and 63.9 % of them have moderate and 18.8 % of them have high level in their sensing problem solving skill.

Table 2: Level of sensing problem solving skill of left brain dominant higher secondary students with respect to gender, standard and location of home

Background Variables	Categories	Low		Moderate		High	
		N	%	N	%	N	%
Gender	Boys	61	18.5	208	63	61	18.8
	Girls	67	16.2	267	64.6	79	19.1
Standard	XI	67	18.3	234	63.9	65	17.8
	XII	60	16	241	64.1	75	19.9
Location of home	Rural	94	19	314	63.3	88	17.7
	Urban	34	13.8	161	65.2	52	21.1

The above table reveals that 18.8 % of the left brain dominant boys and 19.1 % of the left brain dominant girls have high level in their sensing problem solving skill, and 17.8 % of

the left brain dominant XI standard students and 19.9 % of the XII standard students have high level in their sensing problem solving skill, and 17.7 % of the left brain dominant rural students and 21.1 % of the urban left brain dominant higher secondary students have high level in their sensing problem solving skills.

Hypotheses testing

H_o1: There is no significant difference between left brain dominant male and female students in their sensing problem solving skill.

Table 3: Difference between left brain dominant male and female students in their sensing problem solving skill

Gender	N	Mean	S.D	Calculated 't'value	Table 't'value	Remarks At 5% LoS
Male	330	16.88	4.24	0.185	1.96	**NS**
Female	413	16.94	4.08			

It is inferred from the above table that the mean scores of the left brain dominant male and female students were found to be 16.88 and 16.94. The calculated't' value (0.185) is lower than the table value (1.96) at 5% level of significance. Therefore, the null hypothesis is accepted and it is concluded that there is no significant difference between left brain dominant male and female students in their sensing problem solving skill.

H_o 2: There is no significant difference between left brain dominant XI and XII standard students in their sensing problem solving skill.

Table 4: Difference between left brain dominant XI and XII students in their sensing problem solving skill

Standard	N	Mean	S.D	Calculated 't'value	Table 't'value	Remarks At 5% LoS
XI	366	16.84	3.97	0.565	1.96	**NS**
XII	376	17.01	4.31			

It is inferred from the above table that the mean scores of the XI and XII standard left brain dominant students were found to be 16.84 and 17.01. The calculated't' value (0.565) is lower than the table value (1.96) at 5% level of significance. Therefore, the null hypothesis is accepted and it is concluded that there is no significant difference between XI and XII standard left brain dominant students' in their sensing problem solving skill.

H_o 3: There is no significant difference between left brain dominant rural and urban students in their sensing problem solving skill

Table 5: Difference between left brain dominant rural and urban students in their sensing problem solving skill

Location of home	N	Mean	S.D	Calculated 't'value	Table 't'value	Remarks At 5%

						LoS
Rural	496	16.71	4.14	1.88	1.96	**NS**
Urban	247	17.32	4.10			

It is inferred from the above table that the mean scores of left brain dominant rural and urban found to be 16.71 and 17.32. The calculated't' value (1.88) is lower than the table value (1.96) at 5% level of significance. Therefore, the null hypothesis is accepted and it is concluded that there is no significant difference between left brain dominant rural and urban students in their sensing problem solving skill

H_o 4: There is no significant difference among government, aided and private schools left brain dominant students in their sensing problem solving skill.

Table 5: Difference among government, aided and private schools left brain dominant higher secondary students in their sensing problem solving skill

Sensing problem solving skill	Source of Variation	SS	MS	Table value at 5% LoS at df 2,738	Calculated 'F' Value	Remarks
	Between groups	168.296	84.148	2.99	4.94	**S**
	Within groups	12547.16	17.002			

It is inferred from the above table that there is significant difference among government, aided and private schools left brain dominant higher secondary students in their sensing problem solving skill. The calculated F value (4.94) is higher than the table value (2.99) at 5% level of significance. Therefore, the null hypothesis is rejected.

POST ANOVA TEST (WALLER-DUNCAN)

Left Brain Dominant Students in their Sensing Problem solving skill

Type of schools	N	Subset for alpha = 0.05	
		1	2
Private	138	15.94	-
Aided	416	-	17.08
Government	187	-	17.29

While comparing the mean scores of left brain dominant government school students (17.29) are better than aided school students (17.08) and private school students (15.94) in their sensing problem solving skill.

H_o5: There is no significant relationship between left brain dominance and sensing problem solving skill of higher secondary students and their sensing problem solving skill

Table 6: Relationship between left brain dominance and sensing problem solving skill of higher secondary students and their sensing problem solving skill

Left brain dominance and sensing problem solving skill	Calculated □□value	Remarks
	0.005	NS

(at 5% level of significance for 741 df the table value of □□is 0.997)

It is inferred from the above table that there is no significant relationship between left brain dominance and sensing problem solving skill of the higher secondary students. The calculated correlation value (0.005) is lower than the table value (0.997) at 5% level of significance. Therefore, the null hypothesis is accepted and it is concluded that there is no significant relationship between left brain dominance and sensing problem solving skill of higher secondary students and their sensing problem solving skill.

Findings and discussion

The findings indicate a general impression that the level of sensing problem solving skill of left brain dominant higher secondary students is moderate, Morris (2006) mentioned that traditional schooling tends to favour left brain dominance people; and the level of sensing problem solving skill of left brain dominant higher secondary students is moderate with reference to gender, standard, and location of home. Merve Oflaz (2011) findings revealed that left brained students were good at problem solving by logic and who can see the differences. Helmuth Nyborg (2005) suggested the results that males have larger average brains than females, and brain size correlates 0.30–0.45 with g (and IQ). Tomoyuki Kojima et al. (2009) concluded and suggested the result that the left cerebral hemisphere rather than the right hemisphere plays a major role in the early recovery from child aphasia.

The t-test reveals that there is no significance difference between gender, standard and location of home in sensing problem solving skill of left brain dominant students. Vengo Regis and Annaraja (2013) conducted a study on brain dominance, thinking styles and

problem solving skills of higher secondary students and the result supports this present study that there is no significance difference between male (N=931) and female (1069) in their sensing problem solving skill of the students and there is no significance difference between XI (N=1095) and XII (N=905) standard students in their sensing problem solving skills. Vengo Regis and Thomas Alexander (2007) concluded that the XII standard students were better than the XI standard students and that study contradicted with the present study.

But, in location of the students, their study contradicted with the present study that there is significance different between rural (N=1392) and urban (N=608) students. Dougherty et.al (1989) conducted a study on Interrelationships between problem solving and number sense is discussed. Ella Cole et.al (2011) suggested that standardized problem-solving assays might prove ideal for studied the evolutionary ecology of simple cognitive traits.

The F-test ANOVA reveals that there is significance difference among type of schools of sensing problem solving skilled left brain dominant higher secondary students. When we compare the post hoc test government school students were better (17.29) in their sensing problem solving skill than aided schools (17.08) and self-financing (15.94) schools. Sajeetha Rachael (2008) results supported the present study that in brain dominance of higher secondary students, government school students were better than private school students. Vengo Regis and Thomas Alexander (2007) findings supported this present study that government school students were better than the private school students. Vengo Regis and Annaraja (2013) conducted a study on brain dominance, thinking styles and problem solving skills of higher secondary students and the result supported this present study that there is significance difference among government, aided and private school students in their sensing problem solving skill and government school students (16.89) were better than aided (16.85) and private school (16.32) students.

The correlation test reveals that there is no significance difference between sensing problem solving skill and left brain dominance of higher secondary students. Vengo Regis and Annaraja (2013) conducted a study on brain dominance, thinking styles and problem solving skills of higher secondary students and the result supported this present study that there is no significance difference between sensing problem solving skill and brain dominance. But, there was contradicted with the current study in regression result that there was significant influence of brain dominance and monarchic thinking style on sensing problem solving skill of the students.

Conclusion

The investigator concluded with this study that left brain dominance influenced the sensing problem solving skill of the students with type of schools. But other variables like gender, standards and location of home not get influenced. Even more studies were conducted in brain dominance and problem solving skills; researcher found the less number of reviews of related studies as supporting factors of the present study. Studies in future may conduct in brain dominance and problem solving skills separately which will really be strengthening the contents and also the scholars those who conduct research in future in brain dominance and problem solving skills.

References:

1. Dougherty, Barbara J and Crites, Terry (1989) *Applying Number Sense to Problem Solving*. Arithmetic teacher, V36 n6 p 22-25 ERIC Number EJ389484

2. Ella Cole, F., Dominic Cram, L., & John Quinn, L. (2011). *Individual Variation in Spontaneous problem-solving Performance among Wild Great Tits*. Animal Behaviour. Vol. 81; No 2; Year 2011. 491-498.
3. Fleming, Grace (2020) "*Characteristics of Left Brain Dominant Students."* Thought Co, Feb.11, 2020, thoughtco.com/tips-for-left-brain-students-1857173.
4. Helmuth Nyborg, (2005). *Sex-related Difference in General Intelligence g, Brain Size, and Social Status.* Personality and Individual Differences. Vol.39; No.3; year 2005. 497-509.
5. Loren D. (1989). The alert scale of cognitive style. Western Michigan University
6. Merve Oflaz (2011) *The effect of right and left brain dominance in language learning*. Procedia Social and Behavioural Sciences 15 (2011) 1507 – 1513. ISTEK Acibadem Schools, Acibadem, Kadikoy, Istanbul, Turkey. Published by Elsevier Ltd. doi:10.1016/j.sbspro.2011.03.320
7. Morris (2006) Morris M. (2006). *The SPD Companion. Right Brain vs. Left Brain learning styles*, 10.
8. Sajeetha Rachael, C. (2008). *Relationship between brain dominance and scholastic performance of higher secondary school students in Chemistry*. Chennai, SRM University : unpublished dissertation)
9. Teija Kujala, Elvira Brattico, (2009). *Detrimental noise effects on brain's speech functions.* Biological psychology. Vol.81; No.3; Year 2009. 135-143.
10. Tomoyuki Kojima, Masaru Mimura, Kenichi Auchi, Masahiro Kato, (2009). *Early recovery from acquired child aphasia and changes of cerebral blood flow.* Journal of Neurolinguistics. Vol.22; No.5; Year 2009. 451-464.
11. Vengo Regis & Thomas Alexander (2007) *Brain dominance and academic achievement of students in Zoology*. (Tirunelveli, St.Xavier's College of Education affiliated to MS University : unpublished dissertation)
12. Vengo Regis & Annaraja (2013) *Brain dominance, thinking styles and problem solving skills of higher secondary students*, Tamilnadu Teachers education university, Chennai Tamilnadu India (Unpublished dissertation)