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Learning Style of Secondary School Students

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ABSTRACT: The present study is aimed to study the different learning styles of male and female secondary school students. A sample of 286 male and 281 female students were selected in this study. The researchers used Learning Style Inventory by K. S. Misra. They calculated the percentage, z-score, mean, SD, skewness and kurtosis and drew pie-chart to analyze the data. The findings of the study revealed that there is very slight difference in the learning style of male and female secondary school students.

Keywords: gender, learning style

I. INTRODUCTION:

In modern times the knowledge that students acquire is not something static, it has become dynamic. Therefore, a lot of issues related with learning are considered while thinking about how to develop learning environment or learning experience. Now a days students' need, drive, interest and their aptitude all these are considered. So, the process of education is student centric to help them understand subjects better. One such idea is learning style because through learning styles it can be understood how a student learns and therefore his study materials or learning experiences can be individualized to develop him. Particularly in the subjects which are considered to be harder, students can be helped with consideration of their proper learning styles, guided materials or classroom planning. Every person has his own way of learning. There is no particular process or method in which people can learn. Everybody has his unique way of learning.

According to Karuna Shankar Misra (2012), "Learning style refers to the way one internally represents experiences and recalls or processes information". Learners are taught in accordance with their learning styles and when they consider their own styles while studying, their academic achievements seem to improve. In this regard, learning style is viewed as "the way in which individuals begin to concentrate on process, internalize, and retain new and difficult information" (Dunn, 1990, cited in Hawk & Shah, 2007).

II. REVIEW OF THE LITERATURE:

Taruna (2015) found significant difference between male and female students in dependent, collaborative, visual, auditory and kinesthetic learning styles. Female students preferred these styles more than their male counterparts and there existed no significant difference between male and female students in independent, competitive, avoidant and participative styles of learning. Sener and Cokcaliskan (2018), Rajalakshmi (2015) and Nirjesh and Sharma (2018) also found significant relationship between male and female students' learning styles and multiple intelligences, gender, age, medium and type of family. Adnan, Abdullah, Ahmad, Puteh, Zawawi and Maat (2013) also found significant difference in visual, verbal, sequential and global learning style based on gender.

Tiwana (2019) found in her study that active, visual, and sequential learning style were positively and significantly related with students' achievement in science and sensing. Global and intuitive learning style was found to be negatively correlated with students' achievement in science. Harvinder (2016) suggested that there was no significant difference between learning styles of male and female students. Gopalakrishnan and Palanivelu (2016) showed that kinesthetic learning style is found to be more prevalent than visual and auditory learning style. There existed positive high correlation between kinesthetic learning style and academic achievement of secondary school students in mathematics. Very low correlation was found in visual and auditory learning styles and academic achievement.

Devasahayam (2003) found that the high and low achieving group in mathematics exhibit differential learning styles. Rahman and Ahmar (2017) showed that visual and auditory learning styles were dominated by women. Ahmad, Safee and Afthanorhan (2014) showed that there were no significant differences among

students with different learning styles with respect to mathematics achievement. The study also suggested that the difference of learning style among students had no impact on mathematics achievement.

Sirmaci (2010) found no difference between the learning styles of male and female students in the sample. It was seen that both female and male students, to a great extent, have visual learning style. Agarwal and Suraksha (2017) revealed that males with high multiple intelligence prefer verbal constructive and verbal reproducing learning styles while female students prefer figural reproducing and figural constructive learning styles. Garima (2016) revealed that there was no significant effect of learning style on academic achievement of senior secondary school students.

OBJECTIVES OF THE STUDY:
1. To study the nature of learning style among the students of secondary stage.
2. To identify the difference of learning style based on gender.

METHOD OF THE STUDY:

RESEARCH DESIGN:

Descriptive survey research design was used to study the learning style of lower secondary and higher secondary students.

SAMPLE:

A sample of 286 male and 281 female students studying in secondary school in north 24 Parganas was collected from two CBSE board schools and four coaching centres.

TOOLS USED IN THE STUDY:

Learning Style Inventory developed by Prof K. S. Misra (2012) was used in this study.

STATISTICAL TECHNIQUE USED:

z-score, percentage, mean, SD, minimum, maximum, skewness, kurtosis, pie-chart were calculated to analyze the data.

RESULTS:

The objective is to study the nature of learning style of secondary stage students. This section deals with analysis related to interpretation of total learning style scores and different types of learning style scores. This is also presented as per the category of gender (male, female) and level (lower secondary and higher secondary).

Table 1

Table showing the percentage of secondary school students having different levels of learning style

Sl. No.	Level of Learning Style	Range of Z-score	N	%
1	Extremely High	+1.76 and above	21	3.70
2	High	+1.26 to +1.75	30	5.29
3	Above Average	+.76 to +1.25	74	13.05
4	Slightly Above Average	+.26 to +.75	70	12.35
5	Average / Modarate	-.25 to +.25	127	22.40
6	Slightly Below Average	-.26 to -.75	136	23.99
7	Below Average	-.76 to -1.25	67	11.82
8.	Low	-1.26 to -1.75	25	4.41
9.	Extremely Low	-1.76 and below	17	3.00

Table no. 1 displays the level of learning style of secondary school students. The result shows that 13.05% students belong to above average and 12.35% students belong to slightly above average group. In average/moderate level there are 22.40% of students. Students, who are slightly below average and below average level are 23.99% and 11.82% respectively. 4.41% students are in low category and 3% students are in the extremely low category.

Figure 1
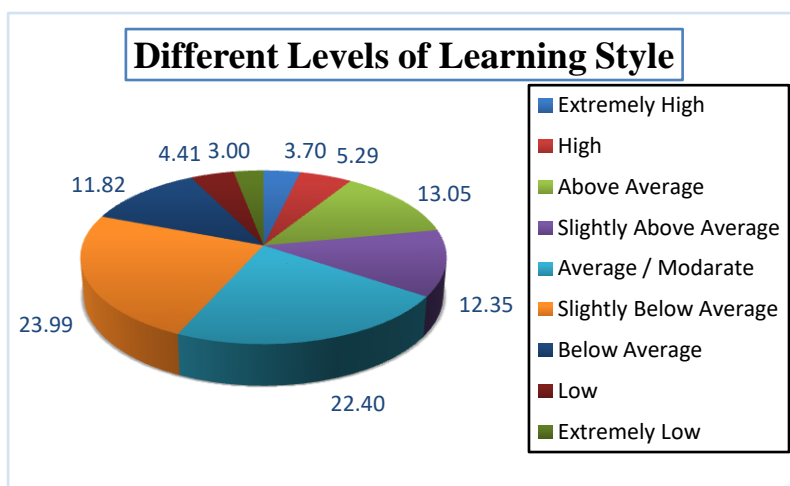*Figure showing the percentage of secondary school students having different levels of learning style*

Table 2
Table showing the gender wise percentage of secondary school students having different levels of learning style

Sl. No.	Level of Learning Style	Male		Female	
		n	%	n	%
1	Extremely High	14	4.90	7	2.49
2	High	13	4.55	16	5.69
3	Above Average	33	11.54	41	14.59
4	Slightly Above Average	31	10.84	39	13.88
5	Average / Moderate	66	23.08	62	22.06
6	Slightly Below Average	68	23.78	68	24.20
7	Below Average	32	11.19	35	12.46
8.	Low	16	5.59	9	3.20
9.	Extremely Low	13	4.55	4	1.42
	Total	286	100	281	100

Table 2 depicts male and female secondary school students' level of learning style. It is shown that the highest number of male and female students belong to slightly below average category with 23.78% and 24.20% respectively. Only 4.9% male students and only 2.49% female students belong to extremely high category. The percentage of extremely low category male students are higher than that of female students, that is, 4.55% and 1.42% respectively.

Table 3
Table showing the level wise percentage of secondary school students having different levels of learning style

Sl. No.	Levels of Learning Style	LS		HS	
		n	%	n	%
1	Extremely High	8	2.83	13	4.58
2	High	15	5.30	14	4.93
3	Above Average	31	10.95	43	15.14

4	Slightly Above Average	28	9.89	42	14.79
5	Average / Moderate	73	25.80	55	19.37
6	Slightly Below Average	89	31.45	47	16.55
7	Below Average	30	10.60	37	13.03
8.	Low	9	3.18	16	5.63
9.	Extremely Low	0	0.00	17	5.99
	Total	283	100	284	100

Table 3 depicts lower secondary and higher secondary school students' level of learning style. High secondary students have scored better than lower secondary students in extremely high category. 4.58% of higher secondary students and 2.83% of lower secondary students are in it. The highest percentage of lower secondary students (31.45%) belongs to slightly below average category and the highest percentage of higher secondary students (19.37%) belongs to average category.

Table 4

Table showing the percentage of secondary school students learning style (different types of learning style)

Sl. No.	Level of Learning style	Range of Z-score	Enactive		Figural		Verbal		Reproducing		Constructive	
			n	%	n	%	n	%	n	%	n	%
1	Extremely High	+1.76 and above	14	2.47	63	11.11	10	1.76	45	7.94	9	1.59
2	High	+1.26 to +1.75	26	4.59	69	12.17	26	4.59	61	10.76	36	6.35
3	Above Average	+.76 to +1.25	58	10.23	74	13.05	63	11.11	70	12.35	50	8.82
4	Slightly Above Average	+.26 to +.75	88	15.52	110	19.40	102	17.99	72	12.70	79	13.93
5	Average / Moderate	-.25 to +.25	111	19.58	112	19.75	106	18.69	105	18.52	91	16.05
6	Slightly Below Average	-.26 to -.75	124	21.87	56	9.88	93	16.40	105	18.52	139	24.51
7	Below Average	-.76 to -1.25	90	15.87	49	8.64	108	19.05	66	11.64	109	19.22
8.	Low	-1.26 to -1.75	38	6.70	14	2.47	32	5.64	15	2.65	32	5.64
9.	Extremely Low	-1.76 and below	18	3.17	20	3.53	27	4.76	28	4.94	22	3.88

Table 4.4 gives a detailed distribution of different types of learning style. The highest percentage of students with enactive learning style (21.87%) and constructive learning style (24.51%) are in slightly below average category. The highest percentage of students with figural learning style belongs to average category with 19.75% of students. Most of the students with verbal learning style belong to below average category with 19.05% of students. Students having reproducing learning style mostly belong to average and slightly below average category with 18.52% in both.

Figure 2

Figure showing the percentage of secondary school students having different levels of enactive and learning style
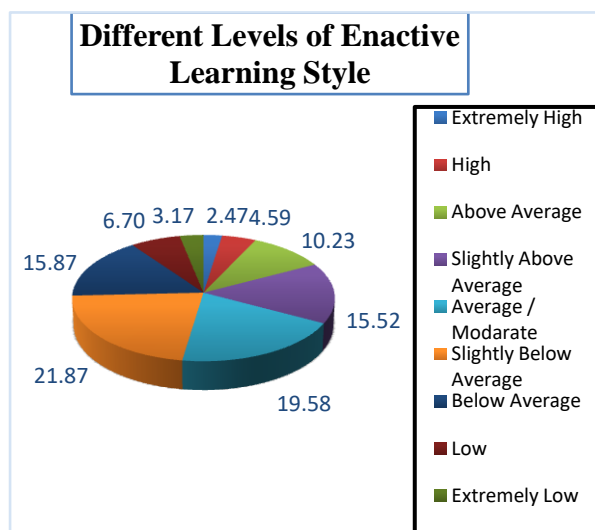

Different Levels of Enactive Learning Style

- Extremely High
- High
- Above Average
- Slightly Above Average
- Average / Modarate
- Slightly Below Average
- Below Average
- Low
- Extremely Low

6.70 3.17 2.47 4.59 10.23 15.87 15.52 21.87 19.58

Figure 3

Figure showing the percentage of secondary school students having different levels of figural learning style

Different Levels of Figural Learning Style

- Extremely High
- High
- Above Average
- Slightly Above Average
- Average / Modarate
- Slightly Below Average
- Below Average
- Low
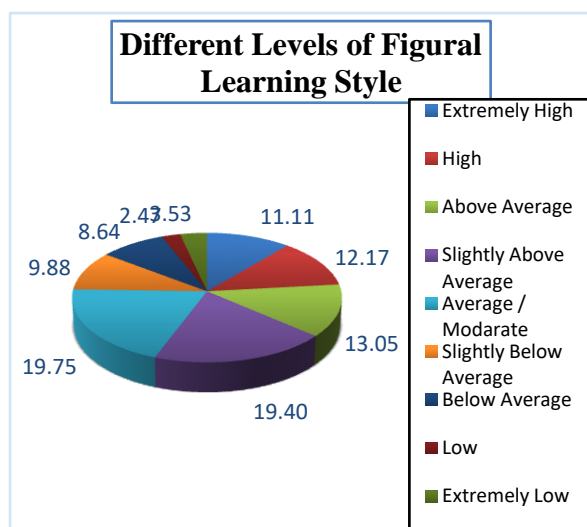- Extremely Low

2.47 3.53 8.64 11.11 9.88 12.17 19.75 13.05 19.40

Figure 4

Figure showing the percentage of secondary school students having different levels of verbal learning style

Different Levels of Verbal Learning Style

Extremely High
High
Above Average
Slightly Above Average
Average / Modarate
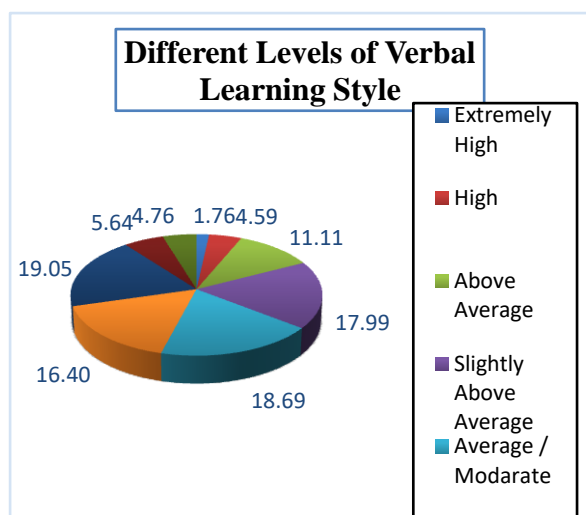
5.64 4.76 1.76 4.59 11.11 19.05 16.40 18.69 17.99

Figure 5

Figure showing the percentage of secondary school students having different levels of reproducing learning style

Different Levels of Reproducing Learning Style

Extremely High
High
Above Average
Slightly Above Average
Average / Modarate
Slightly Below Average
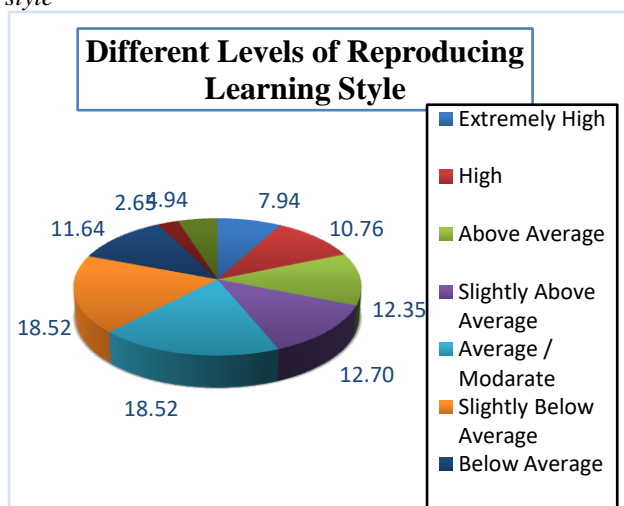Below Average

2.65 4.94 7.94 11.64 10.76 18.52 12.35 18.52 12.70

Figure 6

Figure showing the percentage of secondary school students having different levels of constructive learning style

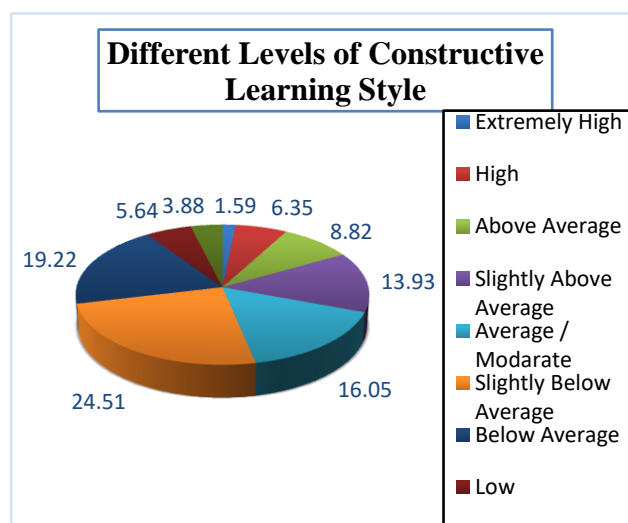**Different Levels of Constructive Learning Style**

Extremely High
High
Above Average
Slightly Above Average
Average / Modarate
Slightly Below Average
Below Average
Low

5.64 3.88 1.59 6.35 8.82 19.22 13.93 24.51 16.05

Table 5
Table showing descriptive statistics scores of learning style (total)

Variable	N	Min	Max	Range	M		Variance	SD
					Stat.	Std. Error		
Learning Style	567	90	200	110	146.48	.855	414.575	20.361

From the table 5 the calculated mean and standard deviation values of the total sample are found to be 146.48 and 20.361. The mean value belongs to average/moderate level of learning style.

Table 6
Table showing the measures of normality of learning style scores for the total sample

Variable	Skewness			Kurtosis			Shapiro-wilk		
	Stat.	Std. Error	z-value	Stat	Std. Error	z-value	Stat.	df	Sig.
Learning Style	.085	.103	0.825	.036	.205	0.175	.991	567	.002

Table 6 shows the skewness and kurtosis value of learning style in total. Here skewness z-value is 0.825 and kurtosis z-value is 0.175. It can be said regarding skewness and kurtosis that the data are normally distributed.

Table 7
Table showing descriptive statistics of learning style of male and female lower secondary students

Gender	N	Min	Max	Range	M		Variance	SD
					Stat.	Std. Error		
Male	142	111	196	85	147.34	1.522	328.807	18.133
Female	141	109	197	88	146.27	1.380	268.498	16.386

From table 7 the mean scores of male and female lower secondary students' learning style are found to be 146.27 and 147.34 respectively. The mean scores belong to average/moderate level of learning style. It also indicates there is very slight difference in the learning style of male and female lower secondary students in terms of learning style.

Table 8
Table showing the measures of normality of learning style of male and female lower secondary students

Gender	Skewness			Kurtosis			Shapiro-wilk		
	Stat.	Std. Error	z-value	Stat	Std. Error	z-value	Stat.	df	Sig.
Male	.676	.203	3.33	-.124	.404	-0.306	.954	142	.000
Female	.586	.204	2.87	.351	.406	0.86	.966	141	.001

From table 8 z-value of skewness and kurtosis of learning style for male are found to be 3.33 and -0.306 and for the female are 2.87 and 0.86 respectively.

Table 9
Table showing descriptive statistics of learning style of male and female higher secondary students

Gender	N	Min	Max	Range	M		Variance	SD
					Stat.	Std.Error		
Male	144	90	199	109	143.22	2.064	613.223	24.763
Female	140	94	200	106	149.16	1.761	434.239	20.838

The mean score of male and female higher secondary students' learning style are found to be 149.16 and 143.22 respectively. The mean scores belong to average/moderate level of learning style. It also indicates that there is very slight difference in the learning style of male and female higher secondary students.

Table 10

Table showing the measures of normality of learning style of male and female higher secondary students

Gender	Skewness			Kurtosis			Shapiro-wilk		
	Stat.	Std. Error	z-value	Stat	Std. Error	z-value	Stat.	df	Sig.
Male	-.064	.202	-0.316	-.359	.401	-0.895	.988	144	.243
Female	-.078	.205	-0.380	-.377	.407	-0.926	.992	140	.581

From table 10 z-value of skewness and kurtosis of learning style for male are found to be -0.316 and -0.926 and for the female are -0.380 and -0.926 respectively which are within +/-1.96 and hence it is assumed that the data are approximately normally distributed. According to Samuel Sanford Shapiro and Martin Wilk (1965) if calculated p values are above 0.05 then the data are distributed normally. From the table p values are found 0.243 and 0.581 which are above 0.05. So, in terms of the Shapiro-Wilk test, it is assumed that data collected for both male and female higher secondary students are normally distributed in terms of learning style scores.

III.   DISCUSSION:

The highest percentage of students belongs to slightly below average and below average level which are 23.99% and 11.82% respectively of all. The highest percentage of students with enactive learning style (21.87%) and constructive learning style (24.51%) are in slightly below average category. The highest percentage of students with figural learning style belongs to average category with 19.75% of students. Most of the students with verbal learning style belong to below average category with 19.05% of students. Students having reproducing learning style mostly belong to average and slightly below average category with 18.52% in both.

Regarding skewness and kurtosis, it can be said that the data are normally distributed and also the data collected for both male and female higher secondary students are normally distributed in terms of learning style scores.

This study reveals that there is very slight difference in the learning style of male and female secondary students in terms of learning style. In the study conducted by Nirjesh and Sharma (2018) also revealed that gender effect the learning styles of the students. But some studies Harvinder (2016), Rahman and Ahmar (2017) stated that there was no significant difference between the learning style of males and female students. Some studies support and some contradict with this study regarding gender difference in learning styles.

IV.   IMPLICATIONS:

Every individual adopts his own style of learning for performance. This paper implies that learning style play an important role in the lives of learners. When students recognize their own learning style, they will be able to integrate it into their learning process and the learning process will be enjoyable and more effective. Teachers should identify the learning style of students and teach them accordingly. Teaching techniques can be modified according to students' learning style. Both teachers and parents are to cooperate with students to provide them suitable environment without enforcing them against their learning style as it will lead to acceptance of fruitful knowledge by students and maintain and retain their interest in studies.

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