

**A STUDY ON SCHOLASTIC ACHIEVEMENT IN CHEMISTRY
IN RELATION TO COGNITIVE STYLE SOCIAL
DISADVANTAGES AND INTEREST OF SENIOR
SECONDARY STUDENTS OF FARIDABAD.**

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Abstract :

The cognitive style, social disadvantage and interest are important factors for the development of Scholastic Achievement in Chemistry. The investigator has tried to find out differences ,relationships between and predictions of influences of the predictor variables to ward, criterion variable- of Chemistry on the performance of Boys and and Girls at the senior secondary level of education. As a result there was no difference in the cognitive style ,social disadvantages and various items of interest with the scholastic achievement in Chemistry. Cognitive style ,interest and favourable social situation are integral part of development process. In any education system and scholastic achievement of each student.

Introduction :

The Cognitive styles are field independence-dependence reflection-impulsivity styles of Conceptualization (Analytic, Categorical, and functional-thematic).In fact, different learners have different Cognitive styles through which information are taken in and subsequently processed by them. Cognitive styles are seen as an individual preferences and habitual approach to organizing and representing information regarding a study or problems ,behaviors and their relationships to Cognitive styles with references to both diagnosis and treatment .For

example ,some people concentrate closely on a small portion of what is available for input, while others attend to a wider sweep of information. The former strategy has the advantage that one can select a few highly task –relevant and task related piece of information and focus attention to them. This ability when developed makes possible for analytical way of experiencing, called as Field –independent Cognitive style.

On the other hand later strategy involves the risk of Cognitive strain necessitates frequent modifications of existing categories and makes intellectual function a more arduous task. This sort of Cognitive style non-analytical or global in nature ,is known as Field dependent Cognitive style.The field independent is is global in nature and it involves the acceptance of the totality of impressions mode of operation. The field independent Cognitive style of articulated type involves in analyzing and structuring incoming information. The field independent students showed insignificantly greater capacity for mastering their own feelings and shortcomings and more dominant personalities ,prefer more logical and structured learning According to Bruner the mental operations of student are generally five types, (i) Scanning and holding (ii) Problem solving (iii) Remembering (iv) Generating and classifying (v) Ordering and relating. Most classroom activities involve one or more of these basic information processing systems. So an intimate relationships exists between dimensions of Cognitive style and different subjects of Scholastic achievement.

In education it is presumed that interest can integrate students experiences outside school in the learning process, encourage students to use prior knowledge in pursuing new knowledge and motivate them to engage in learning task at hand. Interest is defined generally as a positive psychological state that is based on or emerges from person -activity interaction. Interest is defined as selective tendency of individual based on his preference, choices, likes and dislikes. It depends on his interest whether he accepts the information or not. It refers to the motivating force that impels man to attend to a person ,a thing or an activity or it may be the effective experience that has been stimulated by the activity itself .In other words ,interest can be the cause of an activity and the result of participation in the activity .Interest is much linked with motivating force that persuades an individual to engage in cognitive ,conative or affective behavior. Social disadvantage can be defined as a

situation where social disadvantage learners are suffering from poverty, lack of proper educational environment in school ,home, society, indifferent attitude of parents towards education, traditional prejudice, inadequate space in home and time for study ,lack of appropriate school climate, beside the other existing problems in society like drug abuse ,child abuse, corruption, fatalism ,unemployment, organized crime and so on.

OBJECTIVES

The three predictor variable cognitive style, social disadvantages and interest are important factors of scholastic achievement in chemistry .So the main objective of study are were:

- i) To find out gender differences, if any on all the variables under consideration.
- ii) Determination of relationship between the scores of the boys and girls on cognitive style, social disadvantages, interest and scholastic achievement of Chemistry.
- iii) Prediction of scholastic achievement of boy and girl students in Chemistry.

Hypotheses :

- H1 :** There is a significant gender differences on each of the variable.
- H2 :** There is a significant relationship between scholastic achievement in the subject of Chemistry and Cognitive style .social disadvantages ,interest of the boys being under consideration.
- H3 :** There is a significant relationship between scholastic achievement in the subject of Chemistry and Cognitive style .social disadvantages ,interest of the girls being under consideration.
- H4 :** The Cognitive style, social disadvantages measures of interest of the boys combined together is a predictor of their scholastic achievement in Chemistry.
- H5 :** The Cognitive style, social disadvantages measures of interest of the girls combined together is a predictor of their scholastic achievement in Chemistry.

Scholastic achievement refers to the quality and quantity of learning attained in the subject of study after a period of instruction.

VARIABLES :

The following were the predictor variables for the study.

1. Cognitive Style Inventory by P.K.Sinha.
2. Social disadvantage Scale developed by researcher.
3. Different measures of interest
4. The criterion variable for the study was scholastic achievement in Chemistry.

TOOLS :

For the present study following tools were used

1. Assessment of cognitive style
2. Interest inventory(MFIQ) by Dr S.D Kapur & R.N .Singh

A scale for assessing social disadvantage developed by the researcher.

Scholastic achievement test in Chemistry: Marks obtained in the year 2010 by the students of twelfth class at the Semester-II examination under HBSE.

ANALYSIS AND FINDINGS :

To test the hypotheses : 't' test, product moment correlation, multiple regression analysis were used for the study. The result shown in table1 reveals that boys differed significantly from girls on variables like interest on social, mechanical and aesthetic. It can be inferred that there is no significant difference between boys and girls in the areas of Cognitive style ,social disadvantages and different measures of interest in business, clerical, science .All variables are not significant. Some are partially significant .So it is concluded that hypothesis H1 is partially retained.

TABLE 1

Mean differences between Boys and Girls on all variables

Boys(N=40)			Girls(N=40)		df=80
Variables	M	S.D	M	S.D	t
Chemistry	43.67	17.67	38.74	16.08	3.82*
CFT	102.01	35.74	97.10	45.61	1.56
S.Dis	19.94	8.20	19.25	07.29	1.17
Interest					
Business	28.40	18.63	27.63	08.75	0.51
Clerical	29.79	09.19	29.44	09.53	0.87
Science	32.67	11.80	31.12	11.07	1.47
Social	33.97	12.14	32.06	12.00	2.09*
Agricultural	24.28	06.72	24.65	06.73	-0.64
Mechanical	21.21	11.00	19.43	05.00	2.43*
Aesthetic	19.73	05.52	218.79	05.53	2.02*
Outdoor activities	22.91	06.98	23.33	07.46	-0.79

**p<.01 *<.05

TABLE 2

Relationship between the scores of the boys and girls on social disadvantages, cognitive style, interest and scholastic achievement in Chemistry.

Variables	Coefficient of correlation (r)	
	Boys(N=40)	Girls(N=40)
CFT	0.057	0.056
S.Dis	0.419**	0.221*
Interest		
Business	-0.029	0.118
Clerical	-0.045	0.221
Science	0.048	0.84
Social	0.015	0.159
Agricultural	0.048	0.123
Mechanical	0.017	0.040
Aesthetic	0.133	0.009
Outdoor Activities	0.094	0.007

P<.01 *P<.05

From the table 2 it is found that very low positive relationship exists in boys between cognitive style, interest in science, social and agricultural Very low negative relationship relationship exists between interest in business, social and scholastic achievement in chemistry .The result reveals that relationship between scholastic achievement in chemistry and social disadvantage, interest on outdoor activities of boy students is significant. Some are partially significant so hypothesis H2 is partially retained. In case of girls, it is found that very low positive relationship exists in between scholastic achievement of chemistry and cognitive style, interest in mechanical, aesthetic and outdoor. The result reveals that relationship between scholastic achievement in chemistry, social disadvantage and cognitive style and interest is significant. As all the values are not significant hence the hypotheses H3 is partially retained.

TABLE 3

Multiple regression of scholastic Achievement in Chemistry simultaneously with all the predictor variables for boys.

Predictor variables	Beta	t	P
CFT	0.02	0.45	0.65
S. Dis Interest	-0.42	-8.69	0.00
Business	-0.07	-1.39	0.17
Clerical	-0.12	-1.98	0.05
Science	0.01	1.68	0.09
Social	0.11	1.77	0.08
Agricultural	0.04	0.71	0.48
Mechanical	0.00	-0.09	0.93
Aesthetic	0.09	1.66	0.10
Outdoor activities	-0.02	-0.09	0.93

Multiple R²=0.2314 obtained value =8.655

Multiple R=0.4810

Intercept=44.0 1384

TABLE 4

Multiple regression of scholastic Achievement in Chemistry simultaneously with all the predictor variables for girls.

Predictor variables	Beta	t	P
CFT			
S.Dis	0.08	1.49	0.14
Interest	-0.21	-3.94	0.00
Business	-0.02	-0.32	0.75
Clerical	0.09	1.32	0.19
Science	0.12	1.66	0.10
Social	0.03	0.44	0.66
Agricultural	0.02	0.27	0.79
Mechanical	0.05	0.76	0.45
Aesthetic	-0.12	-1.85	0.07
Out door activities	-0.03	-0.39	0.69

Multiple R² = 0.1328 obtained value = 4.057

Multiple R = 0.3644

Intercept = 27.56

Now substituting different B values from the table in equation (1). The regression equation for prediction of scholastic achievement in chemistry of the boy students from the combination of all the predictor variables takes form as given below:

$$Y = 0.2 X_1 - 0.42 X_2 - 0.07 X_3 - 0.12 X_4 + 0.1 X_5 + 0.11 X_6 + 0.04 X_7 + 0.00 X_8 + 0.09 X_9 - 0.02 X_{10} + 44.01$$

From the table 3, it is clear that the regression procedure resulted in a R² of 0.2314, F(12345) Obtained value = 8.655 P < 0.00 It indicates that about 23% of variance of scholastic achievement in chemistry explained jointly by cognitive style, social disadvantages and different measures of interest. Moreover the multiple correlation of (found to be less than R) between scholastic achievement in chemistry and all the predictor variables was found to be 0.48 which is significant at 0.01

level. So cognitive style, social disadvantages, measures of interest of the students combined together is a good predictor of their scholastic achievement in Chemistry. Hence the hypothesis H4 is retained.

Now substituting different values from the table 4 in equation (1) we get,

$$Y = 0.08 X_1 + 0.21 X_2 - 0.02 X_3 + 0.09 X_4 + 0.12 X_5 + 0.03 X_6 + 0.02 X_7 + 0.05 X_8 - 0.12 X_9 - 0.03 X_{10} + 27.57$$

From the table 4, it is clear that the regression procedure resulted in R^2 of 0.1328. $F(12,318)$ obtained value = 4,057, $P < 0.00$. It indicates that about 13% of Variance of scholastic achievement in chemistry was explained jointly by social disadvantages, cognitive styles and different measures of interest of the students under consideration. Moreover the multiple correlation between scholastic achievement and all predictor variables was found to be 0.3644 which was significant at .01 level. So hypothesis H4 is retained. Girls showed significant weakness in chemistry in comparison to boys. They suffered from lack of environmental guidance, educational backwardness of family, indifferent attitude towards education by their parents, poverty, engagement in traditional household activities instead of study at home. As a result girls are deprived from getting as much amenities as are provided to their counterparts. The positive association between social disadvantage and scholastic achievement necessitates removal of social disadvantage for better scholastic achievement in chemistry.

It can be stated that cognitive style, social disadvantages, different measures of interest are influential predictor variables towards development of scholastic achievement in chemistry.

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