

Effect of Cognitive Style on Academic Performance

By

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Abstract

The study was designed to search the impact of cognitive style on academic performance school children. Sample of the study comprises 400 subjects having five different cognitive styles. The objective of the study was to compare the subjects of five different cognitive styles on academic performance. It was hypothesised that, subject belong to integrated and systematic cognitive style would show better academic performance than that of split and intuitive cognitive style. Result of the study revealed significant F ratio. Thus, the result provided strong support to the assumption stated in the study.

Key words: Cognitive styles, Academic performance

Introduction

The word education has been derived from Greek word 'educare' which means that 'to bring up' or 'to rise'. Bringing up and raising means shaping the behaviour and habits accordance with the needs of society. Therefore, the education is a development of desirable habits, attitudes and skills which help an individual to adjust in the society. In this process of education we try to modify the behaviour of an individual. Thus modification of behaviour helps his/her healthy adjustment in society.

Education is the foundation stone of a nation's intellectual power which shapes the power profile of the nation in world community. Thus it is said that progress of a country, particularly of a democratic country, depends upon the quality of its system of education. It is essential that various capacities of the individual be given adequate opportunity to manifest and development of themselves with their inner potential up to the maximum level. In this context the knowledge of psychology and its use in life is must for each and every individual who work in the field of education. Therefore educational psychology is playing an important role in teaching-learning as well as evaluation process in many ways, here are few variables which plays decisive role in the process of education among that one of the variable is Cognitive style.

Concept of Cognitive Style: Cognitive styles are defined as consistent patterns of functioning which are mainly present in perceptual and intellectual activity (Rayner & Riding 1997; Riding, 1997). They establish a qualitative approach to behaviour, in contrast to the dominant quantitative approach outlined by attitudinal dimensions (Messick, 1994).

Field dependence-independence is considered one of the most heuristic cognitive style constructs (Messick, 1996; Price, 2004; Sternberg, Grigorenko, & Zahn, 2008; Sternberg & Williams, 2002) and has been shown consistently to determine academic professional trajectory (Guisande, Páramo, Soares, & Almeida, 2007a), the way teachers teach (Evans, 2004) and the type of interaction between teacher and student (Saracho, 2000).

Cognitive style is a hypothetical construct that has been developed to explain the process of mediation between stimulus and response. The term cognitive style refers to the characteristic ways in which an individual conceptually organizes the environment.

Cognitive style is also understood in term of consistent pattern of organizing and processing information. Coop and Sigel (1971) equated cognitive style with modes of behaviour rather than mediating processes. They used the term cognitive style to denote consistencies in individual modes of functioning in a variety of behavioural situations

Dimensions of Cognitive Style: There are five dimensions of cognitive styles

- Systematic styles- An individual who typically operates with a systematic style uses a well define step by step approach when solving a problem.
- Intuitive style- The individual, whose style is intuitive, uses an unpredictable ordering of analytical steps when solving a problem.
- Integrated style- A person with an integrated style is able to change styles quickly and easily. Such style changes seem to unconscious and take place in a matter of seconds.
- Undifferentiated style- A person with such a style appears not to distinguish or differentiate between the two style extremes; i.e.; systematic and intuitive, and therefore; appears not to display a style.
- Split-style- An individual with split style shows fairly equal degrees of systematic and intuitive specialization. However, people with a split style do not possess an integrated behavioural response; instead, they exhibit each separate dimension in completely different settings; using only one style at a time based on nature of their tasks.

Cognitive styles are the characteristic, self consistent modes of functioning which individuals' shows in their perceptual and intellectual activities. It means that the characteristic way in which an individual goes about taking information from the world is referred as cognitive style. It is a characteristic and systematic procedure within the psycho-physical functioning of an individual that helps him to grasp or hold certain signals, power from environment and to arrive at a desired end with the help of his innate potentialities, perceptions and his intellectual abilities like knowledge, understanding, comprehension, application, analysis and synthesis etc. So, it refers to the modes an individual employs in perceiving, organizing and labelling various aspects of the environment (Schilling, 1981).

Material and Method

Aim: Present study intended to search the influence of cognitive style on academic performance.

Objectives: To search the impact of five different dimension of cognitive style on academic performance.

Hypothesis: On cognitive style, subjects will found differ significantly from each other. However, subjects belong to integrated and systematic cognitive style would show better academic performance than that of split and intuitive cognitive style.

Sample: The sample of study was consisted of 400 college students, are selected randomly from various colleges of Nagpur University, no sex differences will be considered while finalizing the sample. Stratified random sampling method was used to select the respondent. The age group of the respondent were ranges from 18 to 25.

Tools: Cognitive Style Inventory: Cognitive style inventory gives an estimate of cognitive style of an individual in a five-point format. The scale is highly reliable and valid.

Procedure of data collection: The subject selected for study were called in a small group, and seated comfortably. Instructions related to inventory and test material were provided to them and ask them to complete the task.

Variables: Cognitive styles were treated as independent variables, where as academic performance was treated as dependent.

Research Design: More than two randomized group design was used.

Statistical Treatment: In the first stage, mean and standard deviation was computed. Secondly, to find the inferences the data was analysed by One Way ANOVA and Scheffe's Test of Multiple Comparison. Interpretation and discussion was done considering the result of the study.

Result and Discussion

Initially, the data was analyzed using descriptive statistics i.e. Mean and SD. The values obtained; are presented in the table given below in

Table No.1 Showing means and standard deviations values on five dimensions of cognitive styles.

Dimensions of cognitive styles	N	Mean	SD
Systematic	81	332.82	89.54
Intuitive	71	303.67	94.50
Integrated	49	310.51	93.56
Split	151	354.57	81.20
Undifferentiated	48	352.95	88.72

Inspection of mean values presented in the table reveals that, subjects differ on mean score. Mean score obtained by the subjects belongs to split cognitive style (M=354.57, SD=57) are greater than systematic, intuitive and integrated cognitive style. Subject belongs to intuitive cognitive style scored comparatively smaller mean score (M=303.67, SD=94.50). In order to search the significant differences among the five dimensions of cognitive style on academic performance; the data was further analyzed using One Way ANOVA. The results are as followed.

Table No. 2 Showing summary of One Way ANOVA on Academic Performance

Sources of variation	SS	d.f.	MS	F
Between	6752.79	4	1688.19	13.87**
Within	48065.27	395	121.68	
Total	54818.07			

(F=13.87, df=4 & 395, p<.01) **Significant at .01 level

The computed value of F i.e. 13.87 is much higher than both the critical values of F at .05 and .01 levels of significance. Hence, it should be taken as quite significant. Consequently, the hypothesis of the study is accepted. Thus, a significant difference definitely exists among the mean scores of five dimensions of cognitive style.

In order to search the intergroup mean differences the data was analyzed using subsequent analysis of ANOVA known as Scheffe's Test of Multiple Comparison. The results obtained are presented in the table given below.

Table No.3 Showing Intergroup Mean Comparison on Academic Achievement

SrNo	Cognitive style	Systematic	Intuitive	Integrated	Split	Undifferentiated
1	Systematic	X	8827.97 (NS)	42046.23**	107868.56**	30458.78**
2	Intuitive		X	11594.81(NS)	170977.93**	5703.37(NS)
3	Integrated			X	269414.70**	1304.60(NS)
4	Split				X	245160.63**
5	Undifferentiated					X

In the above table, significant values denoted by double asterisks. And non-significant values denoted by 'NS'. Result obtained on Scheffe's test reveals that, comparison between systemic and intuitive style, intuitive with integrated, intuitive with undifferentiated and integrated with undifferentiated brought out non-significant result. However, comparison between systemic and integrated, systemic and split, systemic and undifferentiated, intuitive and split, integrated and split and split with undifferentiated styles found highly significant. After verification of hypothesis it was observed that, most of the hypotheses are satiated by result. Thus, it can be conclude that, on cognitive style subjects found differ significantly.

Conclusion: On dimensions cognitive style, subjects found differ significantly. Thus, the impact of different cognitive styles prominently observed on academic performance.

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