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STUDY OF THE COGNITIVE STYLE OF SENIOR SECONDARY SCHOOL STUDENTS WITH RESPECT TO THEIR STREAMS

Abstract

Cognitive style is considered as one of the most important variable affecting the students in academics. It is the unique way in which an individual think, perceive and remember information. The present study was conducted to investigate the cognitive style adopted by Senior Secondary School students with respect to their streams. The investigator has selected 150 Senior Secondary School students (50 each from Science, Arts and Commerce background) from Ghaziabad district. Simple random sampling technique has been used to collect sample. For collection of data, the investigator has used Cognitive Style Inventory (CSI) constructed and standardized by Praveen Kumar Jha in 2001. For result analysis, the Chi-square test has been used. Upon verifying hypothesis, significant difference has been found between Cognitive Styles among Secondary School students due to variation in their streams. The finding of the study revealed that Secondary School students of Science stream majorly possess Integrated Cognitive Style; Arts stream students majorly possess Intuitive Cognitive Style and Commerce steam students possess Split Cognitive Style.

Keywords: Cognitive Style, Systematic Cognitive Style, Intuitive Cognitive Style, Integrated Cognitive Style, Undifferentiated Cognitive Style, Split Style, Science Stream, Arts Stream, Commerce Stream.

INTRODUCTION

In the most general terms, Cognitive styles can be described as a preferred tool for approaching a problem. Cognitive style reflects manner or mode of Cognition. Cognition is a broad term which includes mental processes like thinking, perceiving, imagining, attending and the information processing by which the person acquires knowledge, solves a problem and makes future plan.

The Cognitive Style describes how an individual acquires knowledge (Cognition) and processes information (Conceptualization). The Cognitive Styles are related to mental behaviors, habitually applied by an individual to problem solving and generally to the way that information is obtained, sorted and utilized.

Unlike individual difference in abilities which describe peak performance, Cognitive styles describe a person's typical mode of thinking, remembering or problem solving. Furthermore, styles are usually considered to be bipolar dimensions; having a particular Cognitive style simply denotes a tendency to behave in a certain manner. Cognitive Style is usually described as a personality dimension which influences attitudes, values and social interaction.

Cognitive style is less about the decisions that individuals make and more about the processes used to make them. Individuals vary in predictable ways along 5 dimensions of Cognitive style as explained below.

Dimensions of Cognitive Style

Systematic style

An individual identified as having a systematic style is one who rates high on the systematic scale and low on the intuitive scale. The systematic style is associated with logical, rational behavior that uses a well-defined step-by-step approach to thinking, learning, and overall plan for problem solving.

Intuitive style

An individual who rates low on the systematic scale and high on the intuitive scale is described as having an intuitive style. Someone, whose style is intuitive, uses an unpredictable ordering of analytical steps when solving a problem, relies on experience patterns, and explores and abandons alternatives quickly.

Integrated style

A person with an integrated style rates high on both scales and is able to change styles quickly and easily. Such style changes seem to be unconscious and take place in a matter of seconds. In fact, integrated people are often referred to as problem seekers because they consistently attempt to identify potential problems as well as opportunities in order to find better ways of doing things.

Undifferentiated style

An individual rating low on both the systematic and the intuitive scale is described as having undifferentiated cognitive behavior. Such a person appears not to distinguish or differentiate between the two style extremes; i.e.; systematic and intuitive and, therefore, appears not to display a style. In fact, in a problem-solving or learning situation, he or she may exhibit receptivity to instructions or guidelines from outside sources. Undifferentiated individuals tend to be withdrawn, passive, and reflective and often look to others for problem-solving strategies.

Split style

An individual rating in the middle range on both the systematic and the intuitive scale is considered to have a split style involving fairly equal (average) degrees of systematic and intuitive specialization. However, people with a split style do not possess an integrated behavioral response; instead, they exhibit each separate dimension in completely different settings; using only one style at a time based on the nature of their tasks or their work groups. In other words, they consciously respond to problem-solving and learning situations by selecting appropriate style.

NEED AND SIGNIFICANCE

Today education aims at catering the needs of each and every student despite of their individual differences. We find individual differences among students based on their intelligence, aptitudes, attitudes, interest and also based on their Cognition and perception. Cognitive and Constructivist theorists have considered learning and instruction related to individual differences (Kiraz, Cogiltary, Cakiroglu and Karaaslan 2005). Individualized learning is strongly associated with characteristics of the learner, his or her Cognitive style. Cognitive style has been identified as one of the most pertinent factors that affect students learning preference (Chen Shiu, 2009). Thus knowing Cognitive styles majorly adopted by students of particular stream will help teachers in

order to utilize relevant approaches to enhance meaningful and effective learning. Present study will help curriculum designers to design curriculum according to the needs of students of particular stream.

OBJECTIVE OF THE STUDY

Major Objective

1. To study the types of Cognitive Styles that exists among Senior Secondary School Students.

   Sub Objective

   1.1. To study the Systematic Cognitive Style that exists among Senior Secondary School students.
   1.2. To study the Intuitive Cognitive Style that exists among Senior Secondary School students.
   1.3. To study the Integrated Cognitive Style that exists among Senior Secondary School students.
   1.4. To study the Undifferentiated Cognitive Style that exists among Senior Secondary School students.
   1.5. To study the Split Cognitive Style that exists among Senior Secondary School students.

2. To study the types of Cognitive Styles that exists among Senior Secondary School Students due to their variation in their streams.

   Sub Objective

   2.1. To study the Systematic Cognitive Style that exists among Senior Secondary School students of Science, Commerce and Arts stream.
   2.2. To study the Intuitive Cognitive Style that exists among Senior Secondary School students of Science, Commerce and Arts stream.
   2.3. To study the Integrated Cognitive Style that exists among Senior Secondary School students of Science, Commerce and Arts stream.
   2.4. To study the Undifferentiated Cognitive Style that exists among Senior Secondary School students of Science, Commerce and Arts stream.
   2.5. To study the Split Cognitive Style that exists among Senior Secondary School students of Science, Commerce and Arts stream.

HYPOTHESIS OF THE STUDY

1. There is no significant association in the type of cognitive styles that exist among the senior secondary school student due to variation in their streams.
2. There exists no significant difference in cognitive styles of senior secondary school students of art stream
3. There exists no significant difference in cognitive styles of senior secondary school students of science stream
4. There exists no significant difference in cognitive styles of senior secondary school students of commerce stream

METHOD OF STUDY

Survey method has been used in the current study to explain the Cognitive styles that exist among Secondary School students.

Population -> 12th class students of Science, Commerce and Arts steams studying in schools of Ghaziabad.

Sample ->

Schools	**Stream**			**Total**
	Science	**Commerce**	**Arts**	
1	25	25	25	75
2	25	25	25	75

Tools ->

Variable	**Tool Used**
Cognitive Style	Cognitive Style Inventory (CSI) constructed by Dr. Praveen Kumar Jha (2001)

Statistical Techniques used ->

Statistical techniques used in present study for analysis of data are Chi-square test of Independence and Chi-square test of Equal distribution.

RESULT AND DISCUSSION

Upon analysis of the data investigator found significant results. Overall, Senior Secondary School Students of Ghaziabad has found to possess following Cognitive Styles.

Integrated Cognitive Style **42** out of 150 (28%)

Split Cognitive Style **39** out of 150 (26%)

Intuitive style **30** out of 150 (20%)

Systematic Cognitive Style **27** out of 150 (18%)

Undifferentiated Cognitive Style **12** out of 150 (8%)

STREAM-WISE ANALYSIS OF DATA:

- **Science**: Integrated style (21 out of 50)
- **Arts**: Intuitive Cognitive Style (21 out of 50)
- **Commerce**: Split Cognitive Style (20 out of 50)

Hypothesis 1: There is no significant association in the type of cognitive styles that exist among the students of Senior Secondary School due to variation in their streams.

Chi-square test of independence has been used to test this hypothesis and calculated values are given in the following table.

Table 1

Showing the Chi-Square test value for Cognitive styles among Senior Secondary School students (N=150) due to variation in their streams.

Streams	N	Systematic Style	Intuitive Style	Integrated Style	Undifferentiated Style	Split Style	Chi-Square test value
Science	50	13 (9)	3 (10)	21 (14)	3 (4)	10 (13)	33.22
Arts	50	6 (9)	21 (10)	9 (14)	5 (4)	9 (13)	

Commerce	50	8 (9)	6 (10)	12 (14)	4 (4)	20 (13)	

The Chi-Square critical value for df = 8 as given in the Table are 15.51 and 20.09 respectively for 0.05 and 0.01 levels.

Results: the obtained Chi-Square test value (33.22) is greater than the table value (20.09) at 0.01 levels, and hence the null-hypothesis is rejected. Thus, there is a significant difference between cognitive styles among Senior Secondary School students due to variation in their streams.

Hypothesis 2: There exists no significant difference in cognitive styles of senior secondary school students of Arts stream.

Chi-Square test of equal distribution has been used to test this hypothesis and calculated values are given in following table.

Table 2

	Systematic Style	Intuitive Style	Integrated Style	Undifferentiated Style	Split Style	Chi-Square test value
fo	6	21	9	5	9	16.4
fe	10	10	10	10	10	

N = 50

The critical values of Chi-Square for df = 4 as given in the table are 9.49 and 13.28 respectively for 0.05 and 0.01 level.

Result: The obtained Chi-Square test value (16.4) is greater than the table value 13.28 at 0.01 levels and hence the null hypothesis is rejected. Thus, there is a significant difference in cognitive styles of Senior Secondary School students of arts stream.

Discussion: The difference in cognitive style is not by chance. It is found to be significant.

Hypothesis 3: There exists no significant difference in cognitive styles of Senior Secondary School students of Science stream.

Chi-Square test of equal distribution has been used to test this hypothesis and calculated values are given in following table.

Table 3

	Systematic Style	Intuitive Style	Integrated Style	Undifferentiated Style	Split Style	Chi-Square test value
fo	13	3	21	3	10	22.8
fe	10	10	10	10	10	

N = 50

The critical values of Chi-Square for df = 4 as given in the table are 9.49 and 13.28 respectively for 0.05 and 0.01 level.

Result: The obtained Chi-Square test value (22.8) is greater than the table value 13.28 at 0.01 levels and hence the null hypothesis is rejected. Thus, there is a significant difference in cognitive styles of Senior Secondary School students of science stream.

Discussion: The difference in cognitive style is not by chance. It is found to be significant.

Hypothesis 4: There exists no significant difference in cognitive styles of Senior Secondary School students of Commerce stream.

Chi-Square test of equal distribution has been used to test this hypothesis and calculated values are given in following table.

Table 4

	Systematic Style	Intuitive Style	Integrated Style	Undifferentiated Style	Split Style	Chi-Square test value
Fo	8	6	12	4	20	16
Fe	10	10	10	10	10	

N = 50

The critical values of Chi-Square for df = 4 as given in the table are 9.49 and 13.28 respectively for 0.05 and 0.01 level.

Result: The obtained Chi-Square test value (16) is greater than the table value 13.28 at 0.01 levels and hence the null hypothesis is rejected. Thus, there is a significant difference in cognitive styles of Senior Secondary School students of commerce stream.

Discussion: The difference in cognitive style is not by chance. It is found to be significant.

CONCLUSION

The result of present study clearly validates the hypothesis in question. The result has been found to be significant. Thus, after analysis of data investigator can conclude that there is significant difference in cognitive styles of senior secondary school students of different streams. Hence, investigator feels that there is a need for the development of new instructional programs that could accommodate the unique styles of the individual students.

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