Abstract

Cognition in human life is very essential to be a resource for the society as well as individual development. Cognitive aspects mean the different functional areas of cognitive operation of human being. For assessing the core features of cognitive aspects of the learner and also to find out the mean difference, present study has been arranged properly. Different principles of descriptive studies have been followed in present study. Basically, the term stratified study has been considered as that type of study is highly associated with the different predetermined stratum in respect to the study of corresponding variable. Both natural and artificial dichotomies have been adopted as the stratum of the study. A scale has been designed and properly has been standardized for collecting the corresponding or representative response or data to carry out the present study as per the objectives of the investigation. Judgmental sampling technique has been implemented to identify the specific and also representative data. A quantitative descriptive approach has been followed in the present study. On the basis of some assumptions associated the corresponding variable, some hypothetical aspects have been chosen by the investigator. A lot of variation in terms of descriptive features and stratified mean difference in connection with the students’ cognitive aspects has been obtained through the proper study.

1. Introduction

Human cognition separates the human being from other species of the world. Human cognition is essential aspect to search own identity and also to explore in the world of change. There are various aspects associated with the human cognition like perception, attention, memory, concept formation, language processing, information processing, thinking, reasoning judging and so on. For moving
towards the aims of life, both knowledge and experience play vital role. Perception is an important cognitive aspect associated with the understanding and helps to make subjective interpretations concerning the stimuli. So many components are taken an important place in the case of human perception namely auditory system, visual system and also sensory motor systems etc. A number of elements associated with the psychological state of humanity. Attention is an important aspect of cognitive actions; through which a specific alternative has been selected from more alternatives. It is a process by which a fact has been shifted from one point to specific point. In the study of cognitive psychology, two fundamental approaches have been followed from a long period of time. Signal detection approach and similarity choice approach. Memory is an important aspect of human cognition, is basically focused on the retention of acquired knowledge or information. This ability can play a fundamental role to carry out the human cognition or acquisition of knowledge. Learned knowledge has been processed on the basis of image in brain. Human perception, information classification image formation play a vital role to form concept in respect to the observed facts. Concept formation is an essential factor in the study of cognitive science. Thinking is a fundamental aspect related to the construct of human existence. On the basis of thinking, the general aspect will be specified technically; similarly, the some unidentified issue will be highlighted in connection with the research worthy measurement. Reasoning is a process by which a learned thing has been verified in multiple dimensions. In the present study, researcher has intended to focus on some specific issue of cognitive aspects perceived among the secondary students who are engaged in the secondary education within Uttar Dinajpur District. In present study, cognitive aspects have been emphasized on retention, recalling, recognizing, discriminating, synthesizing, associating, assimilating, transferring, thinking, reasoning, analyzing and problem solving respectively.

2. **Objectives of the study**

At the end of study, research has intended-

- To measure the descriptive nature of cognitive aspects of the secondary students.
- To determine the stratified mean difference in respect to the cognitive aspects.

3. **Hypotheses of the study**

On the basis of the objectives of the study, researcher has determined the follow hypotheses.

1. **H₁**: There exists no significant gender wise mean difference in respect to the features of cognitive aspects.
2. **H₂**: There exists no significant locality wise mean difference in respect to the features of cognitive aspects.
3. **H₃**: There exists no significant gender plus locality wise mean difference in respect to the features of cognitive aspects.

4. **Research Design:**

Research has been arranged on the basis of logical parameter in following segments. Different aspects of the study have been presented below.

**4.1 Population**

All secondary students of Uttar Dinajpur District are considered as a population in present study. 10+2+3 is a nationally accepted educational syntax; 10 class students have been considered as the secondary school.
4.2 Sample & Sampling
There are a lot of secondary schools within the periphery of Uttar Dinajpur district. Four secondary
schools have been selected to collect the corresponding data. In this purpose, purposive sampling
technique has been followed to collect the representative sample.

4.3 Term Defined
In present study, the term Cognitive Aspects has been used to carry out the research. Cognitive
Aspects is sum total different types of psychological aspects associated with the human cognition or
knowledge acquisition. A sum total of retention, recalling, discriminating, recognizing,
assimilating, synthesizing, associating, transferring, thinking, analyzing, reasoning, and problem
solving are known as Cognitive Aspects associated with the human cognition.

4.5 Tools Description
In present study, a scale has been developed on the basis of the nature of corresponding variable.
Presence of Cognitive Aspects Measuring Scale has been developed and also standardized properly.
Different features of said scale have been presented below.

4.4.1 Dimensions of the Scale
Corresponding scale has some pre-determined dimensions to follow properly in respect to the
development the scale and also standardized it. Followings are some dimensions of associated
variables.

Section-A
i. Ability to remember
ii. Ability to recall
iii. Ability to Identity
iv. Ability to discriminate
v. Ability to synthesize
vi. Ability to associate
vii. Ability to assimilate
viii. Ability to transfer

Section-B
i. Thinking
ii. Reasoning
iii. Analyzing
iv. Problem solving

4.4.2 Validity of the Scale
To assess the validity of the test, expert validity and Cronbach Alpha have been determined. The
corresponding value has been presented in the table 4.1. Cronbach Alpha is a very important
statistical technique to assess the validity and also the reliability.

Table: 4.1. Concurrent Validity of the Cognitive Aspects measuring Scale

<table>
<thead>
<tr>
<th>Cronbach Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.804</td>
<td>2</td>
</tr>
</tbody>
</table>
4.4.3 Reliability of the Scale

By following the test–retest method the corresponding reliability coefficient has been determined. The said result has been found as significant in respect to the two-tailed approach of study. Said result has been presented below.

Table: 4.2 Reliability Coefficient of Cognitive Aspects Measuring Scale

<table>
<thead>
<tr>
<th>TESTCA</th>
<th>RETESTCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>50</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

5. Analysis and Interpretation

To determine the descriptive nature of cognitive aspects reflected by the secondary students and also mean difference has also been assessed in this regard. The related analysis has been presented below.

5.1 Descriptive Analysis of Cognitive Aspect of H. S class students

Descriptive features of the variable have been presented below. So, different features of cognitive aspects provided by the higher secondary students have been elaborated below sequentially. In this purpose, researcher has assessed Mean SEm and Standard Deviation of the distribution. Corresponding analysis has been presented below.

Table: 5.1 Descriptive Analysis of Cognitive Aspects

<table>
<thead>
<tr>
<th>N Statistic</th>
<th>Minimum Statistic</th>
<th>Maximum Statistic</th>
<th>Mean Statistic</th>
<th>Std. Error</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUM</td>
<td>34</td>
<td>114.00</td>
<td>167.00</td>
<td>137.7941</td>
<td>2.34189</td>
</tr>
<tr>
<td>CAUF</td>
<td>45</td>
<td>98.00</td>
<td>149.00</td>
<td>128.1333</td>
<td>1.75079</td>
</tr>
<tr>
<td>CARM</td>
<td>75</td>
<td>98.00</td>
<td>166.00</td>
<td>134.2000</td>
<td>1.89689</td>
</tr>
<tr>
<td>CARF</td>
<td>74</td>
<td>84.00</td>
<td>150.00</td>
<td>126.1216</td>
<td>1.67577</td>
</tr>
<tr>
<td>CAURBAN</td>
<td>79</td>
<td>98.00</td>
<td>167.00</td>
<td>132.2911</td>
<td>1.50894</td>
</tr>
<tr>
<td>CARURAL</td>
<td>149</td>
<td>84.00</td>
<td>166.00</td>
<td>130.1879</td>
<td>1.30527</td>
</tr>
<tr>
<td>CAMALE</td>
<td>109</td>
<td>98.00</td>
<td>167.00</td>
<td>135.3211</td>
<td>1.49826</td>
</tr>
<tr>
<td>CAFEMALE</td>
<td>119</td>
<td>84.00</td>
<td>150.00</td>
<td>126.8824</td>
<td>1.23313</td>
</tr>
<tr>
<td>TOTALCA</td>
<td>228</td>
<td>84.00</td>
<td>167.00</td>
<td>130.9167</td>
<td>1.00071</td>
</tr>
</tbody>
</table>

From the above table, it has been identified that average performance of the urban male secondary students is higher than other and similarly in the case of rural female higher secondary students has lower value in respect to the presence of cognitive aspects. The nature of SEm value has specified the properties of normality of said distribution. Resemblance in the value of SD has also been observed; by which it has been specified that the said distribution has the equal level of deviation of individual score. This result has been presented below in graphical format

![Mean of Cognitive Aspects](image)

**Figure 5.1: Presenting Mean Value regrading Cognitive Aspects**

Inter – strata wise mean performance based difference has been specified on the figure of 5.1. Urban male secondary students have the higher performance indicator than urban female students; rural male secondary students have the higher performance indicator than rural female students; urban secondary students have the higher performance indicator than rural students; and male secondary students have the higher performance indicator than female students respectively. So, female students have less cognitive aspects than male students.

**5.2 Interpretation of result of descriptive analysis**

On the basis of above analysis, following have been observed.

- Presence of higher level of cognitive aspects has been observed among the male secondary students.
- Less distribution of individual score has been found in the study of cognitive aspects of the secondary students.

**5.3 Analysis of mean difference**

In this segment of study, mean difference among the strata of the corresponding variable of the study has been analyzed. Such analytical perspectives have been presented below. Collected data has been analyzed on the basis of three different stratum; those are gender, locality and gender plus locality.
Table 5.2: Strata wise Mean Difference regarding Cognitive Aspect

<table>
<thead>
<tr>
<th>Pair</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CAUM - CAUF</td>
<td>9.70588</td>
<td>15.82773</td>
<td>2.71443</td>
<td>4.18333</td>
<td>15.22844</td>
<td>3.576</td>
</tr>
<tr>
<td>2</td>
<td>CARM - CARF</td>
<td>8.52703</td>
<td>22.87562</td>
<td>2.65924</td>
<td>3.22718</td>
<td>13.82688</td>
<td>3.207</td>
</tr>
<tr>
<td>3</td>
<td>CAUB - CARURAL</td>
<td>-.68354</td>
<td>20.98079</td>
<td>2.36052</td>
<td>-5.38298</td>
<td>4.01590</td>
<td>-.290</td>
</tr>
<tr>
<td>4</td>
<td>CAMALE - CAFEMALE</td>
<td>8.89908</td>
<td>18.89932</td>
<td>1.81023</td>
<td>5.31090</td>
<td>12.48726</td>
<td>4.916</td>
</tr>
</tbody>
</table>

In the cases of pair 1, 2, and 4 corresponding null-hypothesis associated with the mean difference has been rejected due to find the significant mean difference at 0.01 level of significant. Insignificant mean difference has been found in the case of pair 3. From the result of the analysis it has been interpreted that gender wise mean difference has been existed in respect to the cognitive aspects found among the secondary students. Similarly, gender plus locality segment of analysis, same result has been found; but, in the case of locality has been found negative result.,

Table 5.3: Result in respect to the corresponding Null-Hypotheses

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Hypothesis No</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>¹H₁: There exists no significant gender wise mean difference in respect to the features of cognitive aspects.</td>
<td>Rejected</td>
</tr>
<tr>
<td>2</td>
<td>²H₂: There exists no significant locality wise mean difference in respect to the features of cognitive aspects.</td>
<td>Accepted</td>
</tr>
<tr>
<td>3</td>
<td>³H₃: There exists no significant gender plus locality wise mean difference in respect to the features of cognitive aspects.</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

6. Conclusion

On the basis of analysis and interpretation of the descriptive and also inferential features in respect to the presence of cognitive aspects of the secondary students, it has been concluded that variations in the presence of cognitive aspects has been found. Therefore, it has been concluded that on the basis of individual; difference the variation in cognitive activities are the common features of human being. The significant mean difference has been found in respect to the gender and also in gender plus locality.

7. References


Dr. Bapi Mishra, Rita Das:: A Quantitative Study on Cognitive Aspects of Secondary Students in Uttar Dinajpur District

1st. Dr. Bapi Mishra is an Assistant Professor, Department of Education, University of Gour Banga, Mokdumpur, Malda, West Bengal. He is intended to discover the unidentified facts related to the different activities performed in the education system in all over the country. He was served as Assistant Teacher in Maniknagar High School, Beldanga, Murchidabad; was also served as Assistant Professor, Nahata J.N.M.S Mahavidyalaya, His area of interest to research the new thought or undiscovered facts. He is interested in Spiritual Exercises.

2nd. Rita Das is a student of P.G section of said university.

She intends to study more through research mode.


