CHAPTER VII

EPITOME

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Complete picture of this investigation has been reviewed in this chapter. At the same time, the results obtained during the study and necessary comments regarding further researches have been summed up in brief, keeping in view the appropriate usages in education system. The implications of the findings have been inferred in this chapter.

7.1 RESUME OF THE RESEARCH

Title of the present study indicates development of Brain Storming Technique and to study its effect on creativity of secondary school children. Investigator here used BST Programme prepared by him in verbal form such that it is found easy to understand. This was done with a view to confirm the importance of developing and nurturing creative thinking skills of the secondary school children.

Alex F. Osborn, first of all, the father of the Brain Storming Technique worked on this Technique. A lot work have been done by him. Investigator made necessary
changes whenever found essential to establish BST Programme. There are several methods to develop and to nurture creative innate power of the children. But very few studies have been made in our country. Investigator found that on the epoch challenges and risks, human beings will have to generate many imaginary ideas using imagination and also they have to develop his creative skills to come to verdict from ideas. In order to meet the need of preparing such training programme, investigator developed this BSTP. It develops creative abilities in the student for his proper mental development.

It was found that the high intercorrelation between intelligence and creativity exists and, therefore, investigator tried to provide enriched programmed material to foster creativity within the children. Hence the BST Programme at Secondary school level with the provision of development of creative abilities will have significant influence on the mental development of children.

Keeping above points in view, investigator developed BSTP and implemented the same.

7.2 FINDINGS OF THE STUDY

On the basis of the data obtained in the previous chapter VI, findings are discussed in the light of the observations and conclusions which were drawn according to
study wise hypotheses formulated in the study and briefed as below:

7.2.1 STUDY-I
Creativity As Dependent Variable

Ha: There is significant impact of the BSTP on the creativity levels of the pupils.

Investigator studied this Ha in the form of HO, and formulated three HO as follows:

HO 1.1 There is no significant difference between experimental and control group children on the creativity.

HO 1.2 There is no significant difference in creativity score of the pupils having high and low IQs.

HO 1.3 There is no significant interaction effect of treatments and IQs on the creativity of the children.

7.2.1.1 ANCOVA Observations after Linear Adjustment; and Mean Differences.

Data: HO 1.1:
Table no. 6.7 shows that

F_{obs.} (25.19) > F_{tab.} (7.86) at 0.01 level test of significance.

Table no. 6.2 shows that

M_{Expt.gr.} (94.44) > M_{Count.gr.} (78.59)

Observation: The HO 1.1 is rejected.

Conclusion: Mean difference is in favour of Experimental group children/Variable
A is significant.

DATA : HO 1.2 :

Table no. 6.7 shows that
\[ F_{\text{obs.}}(25,19) > F_{\text{tab.}}(7.86) \text{ at 0.01 level of significance test.} \]

Table no. 6.2 shows that
\[ \bar{x}_{b1}(94.44) > \bar{x}_{b2}(93.18) \]

Observation : The HO 1.2 is rejected.

Conclusion : Mean difference is in favour of high IQ group children.
The main effect of IQ on creativity is significant and it is more in favour of high IQ group.

DATA : HO 1.3 :

Table no. 6.7 shows that
\[ F_{\text{obs.}}(43.44) > F_{\text{tab.}}(7.86) \text{ at 0.01 level of significance test.} \]

Table 6.2 shows that
\[ \bar{x}_{a1}(114.38) > \bar{x}_{a2}(77.25) \]
\[ \bar{x}_{b1}(94.44) > \bar{x}_{b2}(93.18) \]

Observation : The HO 1.3 is rejected.

Conclusion : It is concluded that mean differences are in favour of experimental group and high IQ group children respectively.

There is an interaction effect of A and B independent
variables on creativity of the secondary school children.
Mean differences shows that the main effect of treatments and IQs are in favour of experimental and high IQ group children, respectively.

Table no. 6.9 shows that the "t" test for adjusted treatment mean difference is

\[ T_1 - T_2 = 34.43. \]

Test is significant

\[ T_1 - T_2 \] is in favour of treatment group children.
It means that BSTP is effective to develop creativity level of the secondary school children.

7.2.2 STUDY-II
Verbal Creativity As Dependent Variable

Ha : There is significant impact of the BSTP on the verbal creativity of the pupils.

Investigator studied this Ha in the form of HO, and formulated three HO as follows:

HO 2.1 There is no significant difference between experimental and control group children on the verbal creativity.

HO 2.2 There is no significant difference in verbal creativity score of the pupils having high and low IQs.

HO 2.3 There is no significant interaction effect of
treatments and IQs on the verbal creativity of the children.

7.2.2.1 ANCOVA observations after Linear Adjustment; and Mean Differences

DATA : HO 2.1
Table no. 6.16 shows that
Fobs. (110.42) > Ftab. (7.86) at 0.01 level of significance tests.
Table no. 6.11 shows that
\[ \bar{X}_{a1} (60.75) > \bar{X}_{a2} (44.50) \]

Observations : The HO 2.1 is rejected.
Conclusion : Mean difference is in favour of treatment group.
It is concluded that the main effect of A variable on verbal creativity is significant.

DATA : HO 2.2
Table no. 6.16 shows that
Fobs. (9.79) > Ftab. (7.86) at 0.01 level of significance test.
Table no. 6.11 shows that
\[ \bar{X}_{b1} (57.06) > \bar{X}_{b2} (48.19) \]

Observations : The Ho 2.2 is rejected.
Conclusion : Mean difference is in favour of high IQ group children.
There is an effect of IQ levels on verbal creativity of the pupils. Mean difference is in favour of high IQ group children.
DATA : HO 2.3

Table no. 6.16 shows that
Fobs. (9.11) > Ftab. (7.86) at 0.01 level of significance test.

Table no. 6.11 shows that
\[ \bar{X}_a_1 \ (60.25) > \bar{X}_a_2 \ (44.50) \]
\[ \bar{X}_b_1 \ (57.06) > \bar{X}_b_2 \ (48.19) \]

Observation : The HO 2.3 is rejected.

Conclusion : It is concluded that mean differences are in favour of experimental group and high IQ group children respectively.

There is an interaction effect of A and B independent variables on verbal creativity of secondary school children. Mean differences show that the main effect of BSTP and IQs are in favour of experimental group and high IQ group children respectively.

Table no. 6.18 shows that the "t" test for adjusted mean difference is,

\[ T_1 - T_2 = 16.53 \]

The test is significant.

\[ T_1 - T_2 \] is in favour of treatment group children.

It means that BSTP is effective to develop verbal creativity of the secondary school children.
7.2.3 STUDY-III
Figural Creativity As Dependent Variable.

Ha There is significant impact of the BSTP on the figural creativity of the pupils.

Investigator studied this Ha in the form of Ho, and formulated three Ho as follows:

Ho 3.1 There is no significant difference between experimental and control group children on the figural creativity.

Ho 3.2 There is no significant difference in figural creativity score of the pupils having high and low IQs.

Ho 3.3 There is no significant interaction effect of treatments and IQs on the figural creativity of the children.

7.2.3.1 ANCOVA Observations after Linear Adjustment; and Mean Differences.

DATA : Ho 3.1

Table no. 6.25 shows that
Fobs. (14.22) > Ftab. (7.86) at 0.01 level test of significance.

Table 6.20 shows that,
\( \bar{X}_a1 (37.88) > \bar{X}_a2 (27.13) \)

Observations : The Ho 3.1 is rejected.
Conclusions: Mean difference is in favour of experimental group children.

Factor A is significant.

DATA: NO 3.2

Table no. 6.25 shows that
F_{obs.} (5.23) > F_{tab.} (4.25) at 0.05 level of significance test, but F_{obs.} (5.23) < F_{tab.} (7.36) at 0.01 level of significance test.

Table no. 6.20 shows that
\( \bar{X}_b_1 \ (29.44) < \bar{X}_b_2 \ (35.56) \)

Observation: The HO 3.2 is rejected at 0.01 level of significance test but accepted at 0.05 level of significance test.

Conclusion: Mean difference is in favour of low IQ group children.

The main effect of IQ on figural creativity is in favour of low IQ group and it is significant at 0.05 level.

DATA: HO 3.3

Table no. 6.25 shows that
F_{obs.} (26.86) > F_{tab.} (7.86) at 0.01 level of significance test.

Table no. 6.20 shows that
\( \bar{X}_a_1 \ (37.88) > \bar{X}_a_2 \ (27.13) \)
\( \bar{X}_a_1 \ (29.44) < \bar{X}_b_2 \ (35.56) \)
Observation: The HO 3.3 is rejected.

Conclusion: It is concluded that mean difference of treatments is in favour of BSTP group children while mean differences of IQs is in favour of low IQ group children.

There is an interaction effect of A and B independent variables on Figural creativity of the secondary school children. Mean differences shows that the main effect of treatments and IQs are in favour of experimental and low IQ group children respectively.

Table no. 6.27 shows that the "t" test for adjusted treatment mean difference is;

\[ T_1 - T_2 = 6.73 \]

The Test is significant.

\[ T_1 - T_2 \] is in favour of experimental group children. It means that BSTP is effective to develop figural creativity level of the secondary school children.

7.2.4 STUDY-IV

Fluency As Dependent Variable

Ha: There is significant impact of the BSTP on the fluency component of the creativity of the children.

Investigator studied this Ha in the form of
HO, and formulated three HO as follows:

HO 4.1 There is no significant difference between experimental and control group children on their fluency component of creativity.

HO 4.2 There is no significant difference in fluency component of the creativity score of the pupils having high and low IQs.

HO 4.3 There is no significant interaction effect of treatments and IQs on the fluency component of the creativity of the children.

7.2.4.1 ANCOVA observations after Linear Adjustment; and Mean Differences.

DATA: HO 4.1

Table no. 6.34 shows that
Fobs. (55.79) > Ftab. (7.86) at 0.01 level test of significance.

Table no. 6.29 shows that
\( \bar{X}_{a_1} (75.88) > \bar{X}_{a_2} (58.56) \)

Observation: The HO 4.1 is rejected.

Conclusion: Mean difference is in favour of experimental group children.

DATA: HO 4.2

Table no. 6.34 shows that
Fobs. (55.22) > Ftab. (7.86) at 0.01 level
Table no. 6.29 shows that

$\overline{X}_{b1} (68.69) > \overline{X}_{b2} (65.75)$

Observation: HO 4.2 is rejected.

Conclusion: Mean difference is in favour of high IQ group children.

The main effect of IQ on the fluency component of the creativity is significant and it is more effective in favour of high IQ group children.

Table no. 6.34 shows that

$F_{obs.} (58.73) > F_{tab.} (7.86)$ at 0.01 level test of significance.

Table no. 6.29 shows that

$\overline{X}_{a1} (75.88) > \overline{X}_{a2} (58.86)$
$\overline{X}_{b1} (68.69) > \overline{X}_{b2} (65.75)$

Observation: The HO 4.3 is rejected.

Conclusion: It is concluded that mean differences are in favour of BSTP training group and high IQ group children.

There is an interaction effect of A and B independent variables on fluency component of the creativity of the secondary school children. Mean differences show that the
main effect of BSTP treatments and IQs are in favour of experimental and high IQ group children respectively.

Table no. 6.36 shows that "t" test for adjusted treatment mean difference is:

\[ T_1 - T_2 = 20.24 \]

The test is significant.

\( T_1-T_2 \) is in favour of treatment group children. It means that BSTP is effective to develop fluency component of creativity of the secondary school children.

7.2.5 STUDY-V

Flexibility As Dependent Variable

Ha There is significant impact of the BSTP on the flexibility component of the creativity of the children.

Investigator studied this Ha in the form of HO, and formulated three Ho as follows:

HO 5.1 There is no significant difference between experimental and control group children on their flexibility component of creativity.

HO 5.2 There is no significant difference in flexibility component of the creativity score of the children having high and low IQs.
HO 5.3 There is no significant interaction effect of treatments X IQs on the flexibility component of the creativity of the children.

7.2.5.1 ANCOVA observations after Linear Adjustment; and Mean differences

DATA : HO 5.1

Table no. 6.43 shows that
Fobs. (25.73) > Ftab. (7.86) at 0.01 level test of significance.

Table no. 6.38 shows that
\( \bar{X}a_1 \) (18.56) > \( \bar{X}a_2 \) (15.63)

Observation : The Ho 5.1 is rejected.

Conclusion : Mean difference is in favour of BSTP group children.
Variable A is significant.

DATA : HO 5.2

Table no. 6.43 shows that
Fobs. (3.62) < Ftab. (7.86) at 0.01 level test of significance.

Table no. 6.38 shows that
\( \bar{X}b_1 \) (15.38) < \( \bar{X}b_2 \) (18.81)

Observation : The Ho 5.2 is accepted.

Conclusion : Mean difference is in favour of low IQ group children.
The main effect of IQ on the flexibility component of the creativity is insignificant.

DATA: \( H_0: 5.3 \)

Table no. 6.43 shows that
\[ F_{obs} (28.94) > F_{tab} (4.25) \] at 0.05 level and
\[ F_{tab} (7.86) \] at 0.01 level test of significance.

Table no. 6.38 shows that
\[ \bar{X}_{a1} (18.56) > \bar{X}_{a2} (15.63) \]
\[ \bar{X}_{b1} (15.38) < \bar{X}_{b2} (18.81) \]

Observation: The \( H_0 \) is rejected.

Conclusion: It is concluded that mean difference of treatments is in favour of BSTP but IQ levels is in favour of low IQ group children.

There is an interaction effect of A and B independent variables on flexibility component of the creativity of the secondary school children. Mean differences show the main effect of treatments and IQs are in favour of BSTP group and low IQ group children respectively.

Table no. 6.45 shows that "t" test for adjusted treatment mean difference is:
\[ T_2 - T_1 = 2.26 \]
\[ t \text{ test is insignificant.} \]

The difference observed is not significant and whatever the difference exist is accidental. It means that
BSTP is not effective to develop flexibility component of creativity of the secondary school children. Also IQ is insignificant hence it is not effective to develop flexibility component of creativity of the secondary school children.

From the above observations and conclusions, investigator made bird eye view findings as follows:

BSTP is powerful mean to develop creativity of the secondary school children. It also plays its role in development of the verbal and figural creative abilities of the children. BSTP is also powerful mean to develop fluency component of creativity of the children. But BSTP is not effective to develop flexibility component of the creativity of the children.

IQ plays its role in development of creativity of the children. IQ is essential to develop verbal and figural creative abilities of the children. It is also important to develop fluency component of the creativity of the children. But IQ does not effective to develop flexibility component of creativity of the children.

Both BSTP and IQ plays jointly their role to develop creativity of the children. They are important to develop verbal and figural creative abilities of the children. Also they are important to develop fluency component of creativity of the children. But BSTP and IQ are ineffective to develop flexibility component of the
7.3 EDUCATIONAL IMPLICATIONS

The high intercorrelations among intelligence and creativity indicate that creativity can be fostered within the individuals by providing this enriched Brain Storming Technique Programme. Also it will be useful to renovate the curricula at high school level.

Successive commission on education have pointed out that, doing critical and creative thinking in our expectation for the children in our school. Keeping in view and to fulfil this demand, investigator made an humble successful effort to develop BSTP. It is useful to make children critical and creative thinking.

BSTP will be useful to make changes in a pupils' way of thinking, developing creative thinking attitude and interests. This programme provides experiences in creative thinking and containing information about the nature and value of the creative process. It is powerful to make differences in creative development. It is one set of material designed to improve creative-problem-solving skills in the school.

This programme will be useful to understand obstacles of creative thinking. It is useful to understand them
and thus it develops creative ability to some extent.
Main aim of BST Programme is to overcome barriers to creative thinking process. It is noteworthy that the BSTP is useful to identify these barriers and to know how they function. Raudsepp suggests,

"... numerous activities, and strategies for increasing creative productivity, nearly all of which are consistent with known principles of creative problem solving. Briefly, he describes specific means of acquiring knowledge in new fields, developing a deeper understanding of one's own field, sensitizing oneself to problems needing creative solutions, learning to systematically find ideas, maintaining enthusiasm, and preparing to show one's ideas."

This BST Programme will certainly fulfil the suggestions of Raudsepp as made above.

In order to help the subjects, teachers, and creative thinkers, the creative thinking (BST) Programme will be useful to develop their abilities to do this kind of creative thinking.

BST Programme, in this study, produced substantial and enduring gains in the development of creativity of the IX class Secondary/Children.

This study suggests that considerable increments in thinking proficiency can be produced by showing the children how to make more effective use of the basic
cognitive capacities they already possesses rather than by attempting to accelerate the emergence basic capacities that normally develop at a later age.

7.4 SUGGESTIONS FOR FURTHER RESEARCH

Success of BST Programme to develop creativity of the Secondary School children enables the investigator to make following suggestions for further researches.

i) Development of multi-methods-thinking programmes and to study their impact on creativity of the pupils.

ii) To study the impact of Brain Storming Technique on originality and elaboration components of creative thinking.

iii) An investigation into the creativity of various Socio-Economic status of students in relation to their basic mental capacities.

iv) To develop the similar BST Programme for the primary school children.

v) To develop creative thinking programme in various
academic subjects.

vi) To study the impact of various blocks on creative talent development.

vii) To investigate the steps to generate creative talent of the pupils.

viii) To develop a "thoughtless Programmes" to develop more thinking abilities in human being to find out unknown exists on this globe.

At a time of mounting national concern over the high degree of creativity so essential in the field of Science and Technology, and hardly less essential in government, business and other areas, education in creative thinking may do much to unlock the door to a vast treasure house of latent ability.

REFERENCES:


BIBLIOGRAPHY


11. Training Creative Thinking. Occasional paper No.6
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<th>Author(s)</th>
<th>Title</th>
<th>Publisher and/or Details</th>
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<td>23</td>
<td>Government of India, Ministry</td>
<td></td>
<td>Ministry of Education.</td>
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"Wisconsin: Wisconsin Research and Development Centre for Cognitive Learning, University of Wisconsin, 1967."
Education and National Development.
New Delhi.


