

Chapter 6

Chapter-VI

SUMMARY, FINDINGS AND SUGGESTIONS

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CHAPTER-VI

SUMMARY, FINDINGS AND SUGGESTIONS

6.1 Introduction

The world of education has been found under dynamic change and one of them has been observed in the arena of teaching thinking. It is now a concern and it has been included as one of the objectives of education. More and more educators have been promoting building thinking ability among learners and it has been gaining momentum across the globe. Since education is not merely the imparting of knowledge but cultivation of certain habits of thinking using these knowledge has already been expressed aim of education through recommendations various commissions and committees. The ability to think effectively is essential in order to make relevant judgments and to discriminate among values. It is this ability to think and act that distinguishes us from the other animals on this planet.

It is observed that our schools have different educational and developmental objectives distributed in various branches subjects in curricula. Various curricular, co curricular and extra curricular activities are carried out in order to meet these objectives. The central organizing force to all these activities is to nurture the creative and critical thinking in the minds of the students so that they become productive and responsible citizen of the future. In the days of technology it should be realized that teaching is not merely imparting the content rather how to think with the content should be the focus of any school activity. Our system of education is been criticized

because of undue emphasis on the teaching of content and overemphasis on the rote memory. There is a need shift our practices of teaching and evaluation from memorization of content and recall in examination hours to development of foundation skills of learning and independent thinking.

6.2 Summary of the study

Present study is carried out with an objective to develop an instructional strategy for primary school teachers to teach creative and critical thinking using content. Thinking tools and strategies were identified and selected tools in order to enhance creative and critical thinking of the sampled teachers. Summary of the study carried out by the investigator is as under:

6.2.1 Statement of the study

Development of an instructional strategy for primary school teachers to teach creative and critical thinking skills

6.2.2 Objectives of the study

1. To select appropriate thinking tools for enhancing creative and critical thinking skills.
2. To develop an instructional strategy using selected combination of thinking tools using appropriate content to enhance creative and critical thinking skills.
3. To enable teachers to incorporate the creative and critical thinking skills into lesson plans.

4. To study the impact of the instructional strategy in enhancing creative and critical thinking skills in teachers.

6.2.3 Explanation of the terms

Instructional strategy in this study refers to the lesson plans incorporating thinking tools and thinking strategies using appropriate content which is to be practised for developing creative and critical thinking in sampled group of teachers.

Instructional strategy consisted of thinking tools, thinking strategies and lesson plans incorporating these thinking skills and strategies.

Creative thinking: the thinking ability to come up with new ideas, to solve problems in original ways, one's imagination, creative behavior in productivity. Following are some of the dimensions of creativity which the investigator had included in this study:

1. Fluency- the speed and ease with which one comes up with new idea/s
2. Flexibility- ones' ability to see things from different angles, including ability to see all senses in the creation of new idea
3. Originality: an ability to produce ideas that are unique and unusual

Critical thinking: the thinking that determines the authenticity, accuracy and worth of information or knowledge claims. A few dimensions of critical thinking that would be considered for the study are comparing analogous situations; evaluating or examining actions; abilities of reasoning or decision making and ability to solve complex problems.

Thinking tools:

A tool is a device or an instrument, which helps us to focus our attention in particular direction. Through practicing these tools of thinking we are exploring the possibilities that in turn facilitate our thinking more creatively and critically. The major thinking tools that were embodied in the present study have been adopted and adapted from Edward deBono's CoRT lessons. Edward de Bono is considered to be the leading authority all over the world on the direct teaching of thinking as a skill. His thinking lessons and in particular CoRT thinking lessons have been in use for many years and in many countries like Venezuela, Singapore, Australia, New Zealand, Canada and many more.

Following thinking tools were selected by the investor in order to infuse creative and critical thinking skill of the sample group of subject during the intervention.

- Plus Minus Interesting (PMI)
- Considering All Factors (CAF)
- Alternatives Possibilities Choices (APC)
- Consequences & Sequel (C & S)

Effectiveness

Effectiveness will be measured on the scores obtained by sampled teachers on test constructed by the investigator. This test consisted of items based problem solving and brainstorming.

It will also be studied based on reaction of teachers on reaction scale.

6.2.4 Hypotheses of the study

Ho1 : Sampled teachers will have no significant difference in the means on awareness of creative and critical thinking on the pre test and post test.

Ho2 : There will be no significant difference in the mean fluency scores of the sampled teachers on the pre test and post test.

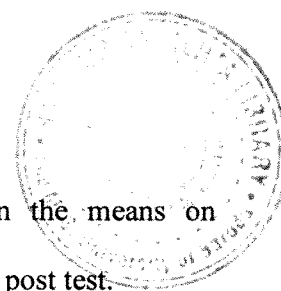
Ho3 : There will be no significant difference in the mean flexibility scores of the sampled teachers on the pre test and post test.

Ho4 : There will be no significant difference in the mean originality scores of the sampled teachers on the pre test and post test.

Ho5 : Sampled teachers will have no significant difference in the means of critical thinking scores on the pre test and post test.

6.2.5 Delimitations of the study

- Study was delimited to the content of standard I to VII appropriate to selected tools during the instructional process.
- Study was delimited to the Gujarati medium primary school teachers following syllabus of Gujarat State Board of School Textbooks.
- Instructional material and test measuring creative and critical thinking is in Gujarati language because the selected sample for the study was from Gujarati medium only.
- Test to measure creative and critical thinking into the teachers is validated through the comments of experts and not the standardized one.



- Selected components for creative thinking are fluency, flexibility and originality only.

6.2.6 The design of the study

The present study was an intervention carried out by the investigator for twelve weeks and was of developmental in nature. The study aimed at evaluating the changes in the teachers as a result of intervention strategies employed to enhance creative and critical thinking skills using suitable content matter. To conduct this experiment investigator had selected pre experimental design, though they provide little control of extraneous variables. The research design selected for the present investigation was **one-group pre test post test design**. Considering the administrative difficulties on the part of the schools and teachers, feasibility of commuting, expenditure involved in the process of experiment and many such constraints led to the said design.

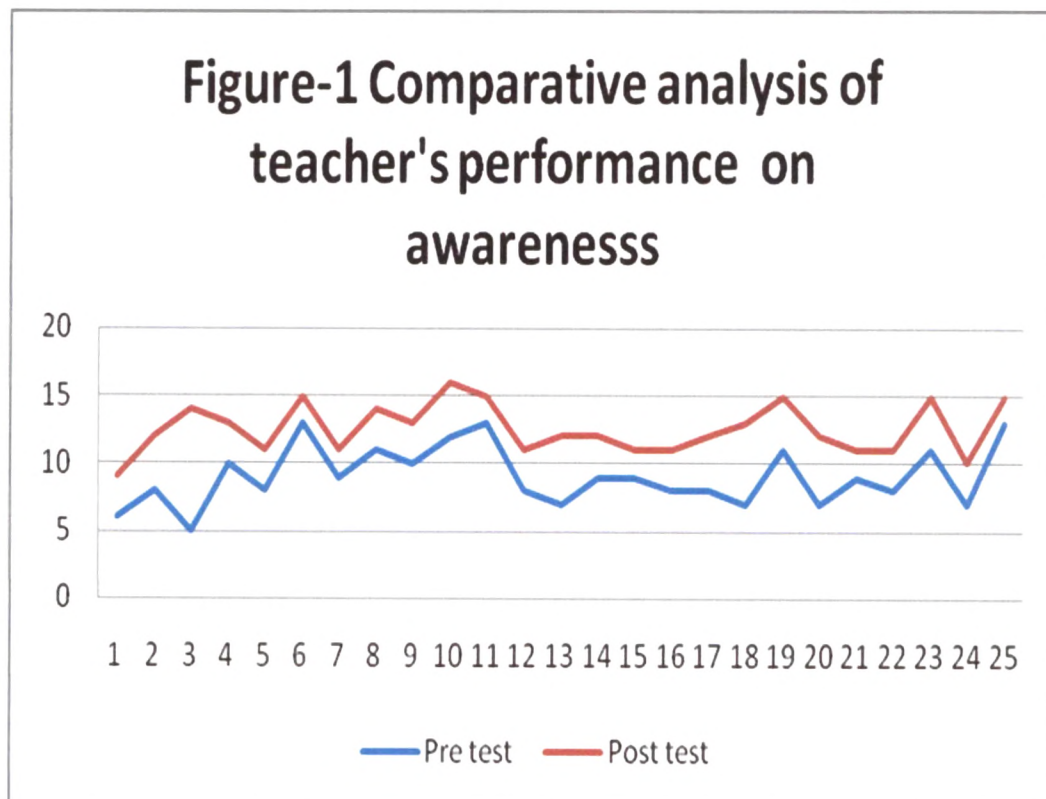
6.2.7 Data analysis

The major objective of the present study is to develop instructional strategy for primary school teachers to teach creative and critical thinking skills using content. In order to study the effectiveness of the developed strategy for enhancing creative and critical thinking quantitative data were collected which were analyzed using correlated t test. Besides this investigator developed reaction scale in order to estimate effectiveness of the intervention. Reactions of the sampled teachers were analyzed using percentage.

6.3 Summary of the results of the study

The results of the present study with respect to stated objectives and formulated hypotheses Ho1: Sampled group of teachers will have no significant difference in the means scores on pre test and post test on awareness of creative and critical thinking is summarized below.

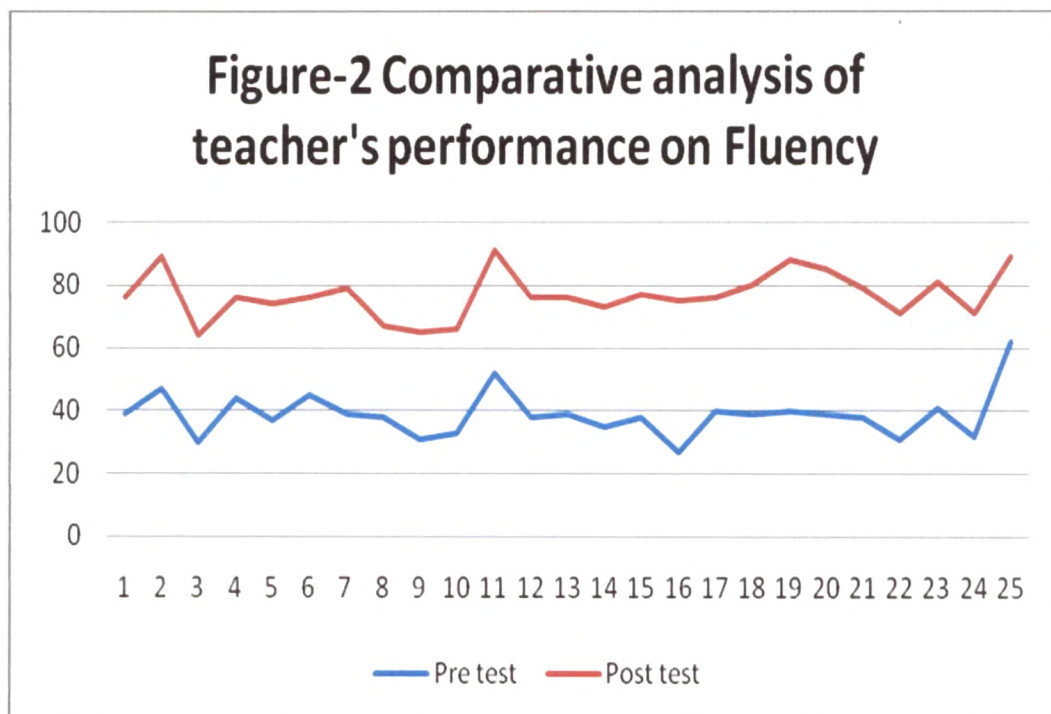
Awareness of sampled teachers on creative and critical thinking was studied by implementing developed tool by the investigator before and after intervention. Chart using their respective scores on pre test and post test were represented in the figure-1.



There was significant difference between the mean scores on the awareness regarding creative and critical thinking of the sampled teachers on pre test and post test. The relative higher mean score on post test showed that the teachers have improved on the awareness of creative and critical thinking.

The results of the present study with respect to stated objectives and formulated hypotheses Ho2: There will be no significant difference in the mean fluency score of the sampled group of teachers on the pre test and post test is summarized below.

Fluency scores of sampled teachers on creativity have been studied by implementing developed tool by the investigator before and after intervention. Chart using their respective scores on pre test and post test were represented in the figure-2.

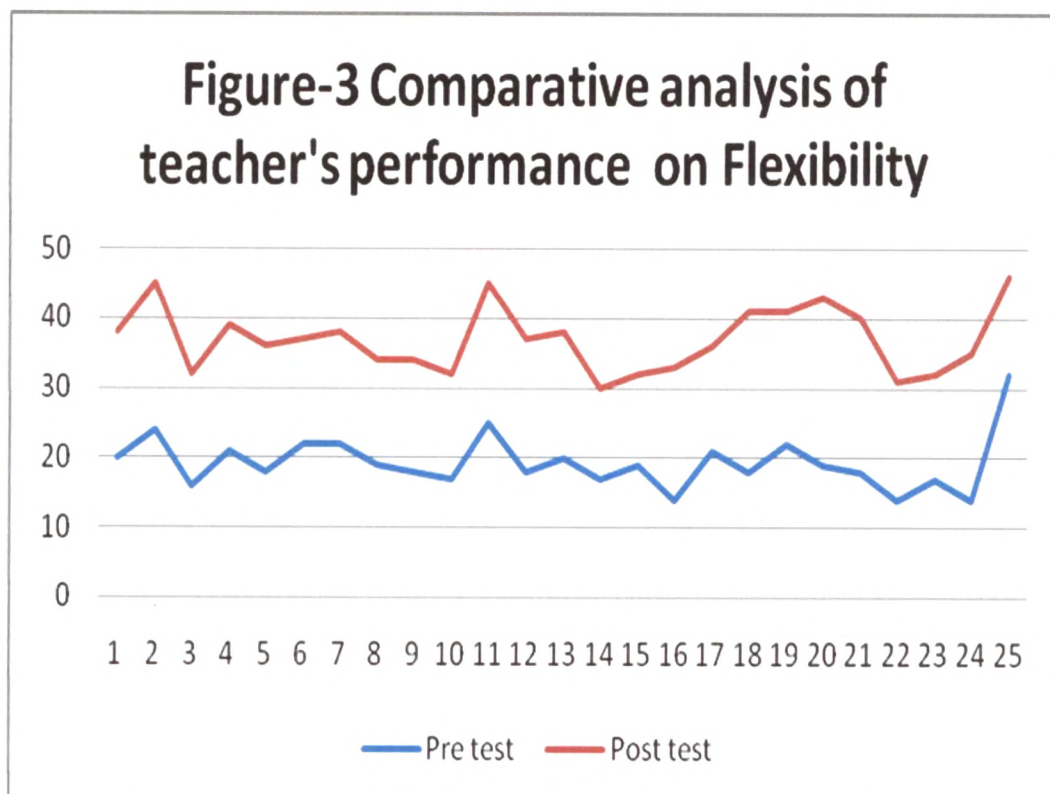


There was significant difference between the fluency scores of the sampled teachers on pre test and post test. The relative higher mean scores on post test showed that the teachers have improved on the fluency dimension of creative thinking.

All the teachers have improved their post test score at the end of the intervention indicating that the developed instructional strategy proved effective in order to improve their fluency component of creative thinking.

The results of the present study with respect to stated objectives and formulated hypotheses Ho3: There will be no significant difference in the mean flexibility score of the sampled group of teachers on the pre test and post test is summarized below.

Flexibility scores of sampled teachers on creativity have been studied by implementing developed tool by the investigator before and after intervention. Chart using their respective scores on pre test and post test are represented in the figure-3.

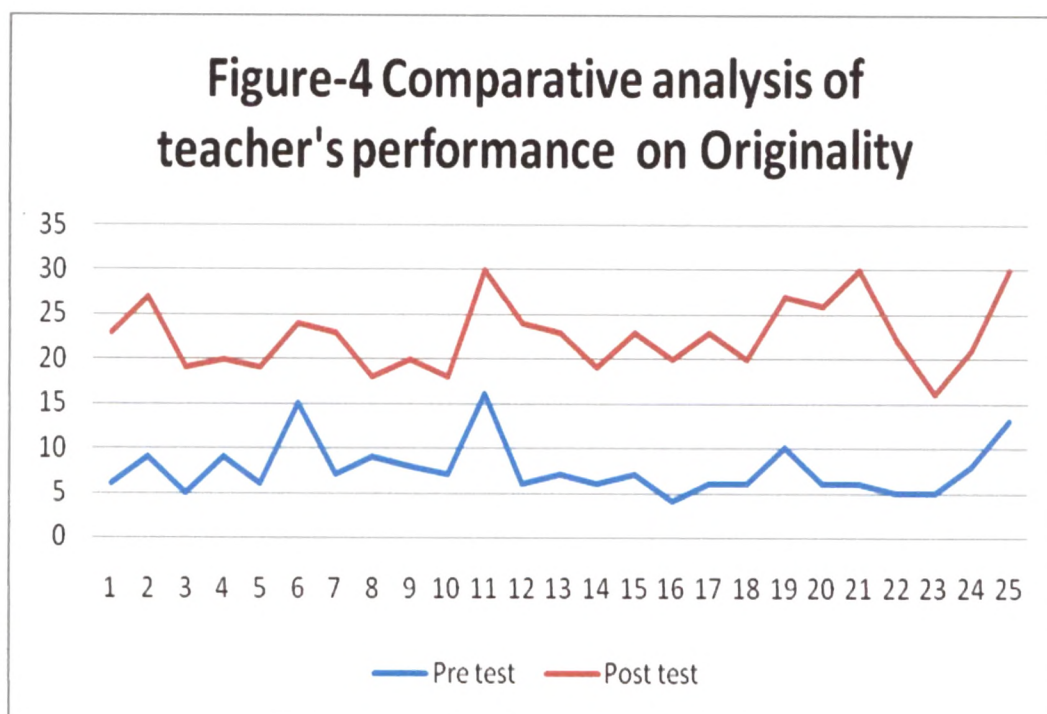


There was significant difference between the mean flexibility scores of the sampled teachers on pre test and post test. The relative higher mean scores on post test showed that the teachers have improved on the flexibility dimension of creative thinking.

All the teachers have improved their post test score at the end of the intervention indicating that the developed instructional strategy proved effective in order to improve the flexibility component of creative thinking.

The results of the present study with respect to stated objectives and formulated hypotheses Ho4: There will be no significant difference in the mean originality scores of the sampled group of teachers on the pre test and post test is summarized below.

Originality scores of sampled teachers on creativity have been studied by implementing developed tool by the investigator before and after intervention. Chart using their respective scores on pre test and post test were represented in the figure-4.

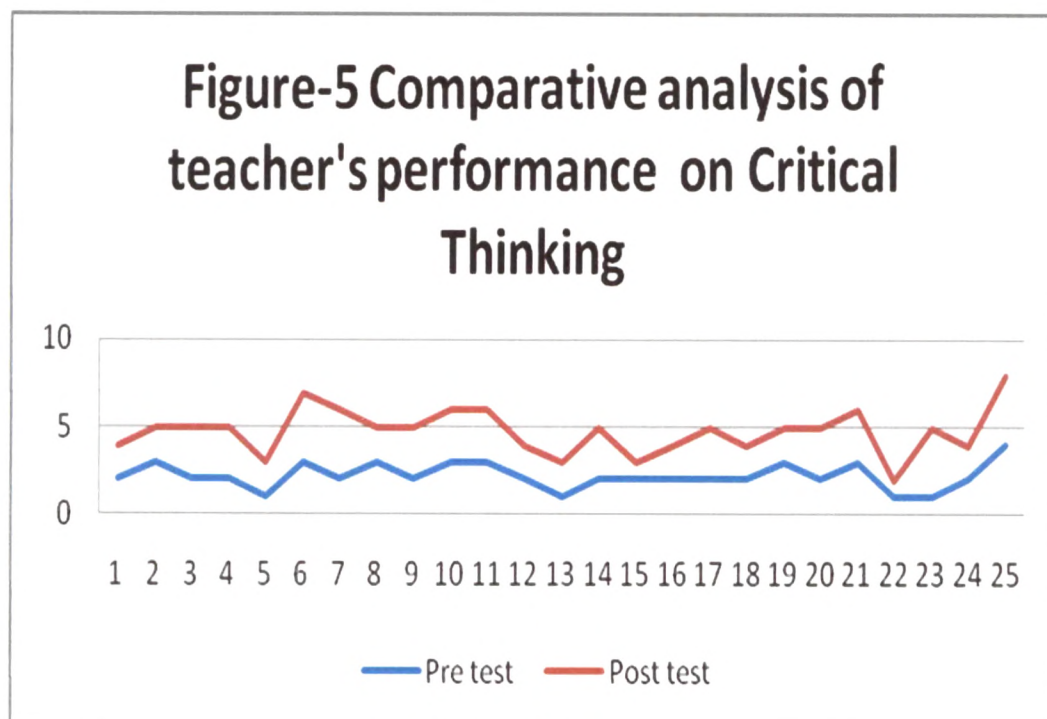


There was significant difference between the originality scores of the sampled teachers on pre test and post test. The relative higher mean scores on post test showed that the teachers have improved on the originality dimension of creative thinking.

All the teachers have improved their post test score at the end of the intervention indicating that the developed instructional strategy proved effective in order to improve their originality component of creative thinking.

The results of the present study with respect to stated objectives and formulated hypotheses Ho5: Sampled group of teachers will have no significant difference in the means scores on pre test and post test on critical thinking is summarized below.

Critical thinking of sampled teachers had been studied by implementing the developed tool by the investigator before and after intervention. Chart using their respective scores on pre test and post test were represented in the figure-5.



There was significant difference between the scores on critical thinking of the sampled teachers on pre test and post test. The relative higher scores on post test showed that the teachers have improved on the critical thinking.

All the teachers have improved their post test score at the end of the intervention indicating that the developed instructional strategy proved effective in order to improve their critical thinking.

6.4 Major findings of the study

The developed instructional strategy incorporating thinking tools and thinking strategies was effective in enhancing creative and critical thinking.

Sampled teachers improved their fluency, flexibility and originality dimensions of creativity through the instructional strategy.

Sampled teachers improved their ability to think critically through the instructional strategy.

6.5 Suggestions based on research work done

1. Since the instructional strategy has helped to improve upon fluency, flexibility and originality dimensions of creative thinking and critical thinking as well similar programmes should be included in teacher education programme at primary level. Accordingly, the curriculum of elementary teacher education programme should be modified.
2. Workshops can be organized in order to enhance creative and critical thinking of in service school teachers at elementary level.
3. Present practices of designing lesson planning can be modified so as to integrate various components of creative and critical thinking.

6.6 Suggestions for further studies

Studying the results obtained through the study investigator would like to make following suggestions for further investigations:

Construction and Standardization of creative and critical thinking test for measuring creative and critical thinking at various levels of schooling i.e. for lower primary level, upper primary level.

Case studies of students having high achievement in the area of creative and critical thinking should be conducted.

Case studies of teachers having high achievement in the area of creative and critical thinking should be conducted.

Development of instructional material for teachers with a view to promote creative and critical thinking is another area of research.

Development of instructional material for students with a view to promote creative and critical thinking is another area of research.