Chapter Seven

Summary and Conclusions

"All science is concerned with the relationship of cause and effect. Each scientific discovery increases man’s ability to predict the consequences of his actions and thus his abilities to control future events."

— Lawrence, Peter

(as cited in quotations archive)

7.01 : Introduction

This chapter summarises each chapter and enlists the implications of the study.

It is divided into two sections. Section one consists of summary of each chapter whereas section two gives implications of present study and problems for further study.

SECTION I - CHAPTERWISE SUMMARY

Chapter I - The Problem

7.02 : Need of the Study

Usually teacher education programmes in India are described as irrelevant, rigid, having a wide gap between theory and practice etc. Various researches assessing the effectiveness of teacher education programmes from various states of India basically supported the above mentioned portrayal of teacher education programmes.
The deficiencies in teacher education system cause ill effects on present day school education i.e. ultimately the future of next generation as Teacher Education provides the human resources to run the schools.

Hence, educational reforms need to be initiated from reforms in teacher education institutions.

If India wants her schools free from rote learning, the undue importance to the limitations imposed on students and authoritarian culture, their teachers' mind set needs be changed.

Being a teacher educator, the researcher found that the prospective teachers (B. Ed. student teachers) were weak in higher order mental processes specifically in divergent thinking. Being not competent in thinking, they adopted only a follower approach and gradually became conformist and rigid. The autocratic atmosphere in teacher education institutions adds to worsen the situation.

Therefore the researcher decided to focus on the competency building of student teachers through this study. When related literature was reviewed, it was found that in all over the world, there is a growing importance attached to creative thinking, not only in the field of education but in business also.

Various education commissions, policy makers thinkers on future trends in education emphasised the importance of inclusion of creativity in education.

Therefore if our students from schools are expected to think creatively, it is essential that their teachers have to think creatively. Since
professional preparation of teachers takes place in teacher education institutions, it is the responsibility of them to provide an input of creative thinking. This may further help add some flexibility and liveliness in teacher education programmes.

Thus the researcher decided to study the effect of programme of enhancement of creativity in teaching on student teachers from B. Ed. colleges.

7.03 : Statement of the problem

"A survey of status of student teachers of University of Pune regarding their creativity in teaching with a view to improving the same through a training programme and testing its effectiveness with special reference to College of Education, Sangamner from Ahmednagar district.

7.04 : Operational definitions

The researcher had used some words with their specific meanings. Operational definitions of those words were as follows:

1. Student teacher : A student who is studying in College of Education under the jurisdiction of University of Pune for B. Ed. course, studying through 'Marathi medium' in the year 2004-05.

2. Creativity in teaching : There is a presence of creativity in teaching when a teacher makes use of his competencies such as openness, sensitivity to the problem, fluency, flexibility, originality, elaboration, redefinition and resourcefulness while discharging his duties as a facilitator.
of learning process. In other words, it is the result/total score of the test which measures the creativity in teaching of student teachers made by the researcher herself.

3. Exposure : It is the score on the researcher made tool which measures the extent of opportunities of variety of experiences made accessible to the student teachers at their school and college level.

4. Emotional quotient : It is the total score on a test which measures emotional intelligence of any individual. "Emotional intelligence" refers to the capacity for recognizing our own feelings and those of others, for motivating ourselves and for managing emotions well in ourselves and in our relationships.

5. Programme : It is a series of learning experiences designed to achieve certain specific instructional objectives within a specified period of time.

6. Rural student teacher : A student teacher who has passed his/her secondary school examination from a school in rural area is called as Rural student teachers. Rural area is a place not having municipality, corporation, cantonment board or notified town area committee as mentioned in the census of India 2001.

7. Urban student teacher : A student teacher who has passed his/her secondary school examination from a school in urban area is called as Urban Student teacher. Urban area is a place having municipality, corporation, cantonment board or notified town area committee as mentioned in the census of India 2001.
7.05 : Objectives
Following were the objectives of the study.

1. To find out the present status of Creativity in Teaching of student teachers from B. Ed. colleges of University of Pune.

2. To prepare a programme for enhancement of Creativity in Teaching.

3. To assess the effectiveness of the programme prepared for improving Creativity in Teaching.

4. To study the relationship between exposure and creativity in teaching.

7.06 : Delimitations

1. The present study covered student teachers studying through Marathi medium only in all colleges of Education affiliated to University of Pune. The experiment was conducted on Marathi medium students of College of Education, Sangamner. Since admissions are centralised and other norms being the same, observations and findings may hold good for any B. Ed. college (having ‘Marathi’ as a medium of instruction) from University of Pune and also for any B. Ed. College from any other University in Maharashtra having similar conditions.

2. The researcher herself implemented the programme. Hence the investigator and experimenter were the same.

3. The tool for measuring Creativity in Teaching was not a standardized tool but was prepared by the researcher and was used after testing and ascertaining its validity and reliability. It was prepared by following all the process part in preparing a standardized test.
7.07 : Significance of the study

The study undertaken is significant in following respects.

1. This study is not only as a remedial one, to be used to lessen the deficiencies of student teachers from a particular college, but it has a strength to bring out the 'change' recommended by various education policy makers and an apex body of teacher education, NCTE. Hence this research can be treated as a primary step of adding new dimensions to teacher education programme as regards 'Creativity in Teaching.'

2. This research also provides a test for measurement of Creativity in Teaching.

3. This study gives a technique of thinking creatively while teaching for conventional B. Ed. course, inservice training and D. Ed. course also.

7.08 : Chapter II - Review of related literature

This chapter was made up of two sections. Section I dealt with theoretical aspects of creativity whereas Section II consisted of researches related to creativity.

Though there are enormous definitions of creativity, creativity could be perceived through four broad areas. They were described by Rhodes. These areas were - creativity as a process, creativity as a product, creativity as a person and creativity as a press. To perceive creativity as a whole all these areas should be taken into consideration. This is an eclectic approach and it was decided as an appropriate approach (by the researcher) to design a programme. However, process aspects were more emphasized. There are
many theories which have tried to answer 'why' and 'how' behind the creative act. Out of them Guilford model of intelligence from a cognitive theory was accepted by the researcher as a base. The factors of creativity in teaching were decided accordingly. The factors of creativity in teaching accepted for this study were fluency, flexibility, originality, elaboration, openness, sensitivity to the problem, redefinition and resourcefulness. Out of these, openness and resourcefulness were not mentioned by Guilford. But when personality traits of creative people noted by many psychologists were analysed, 'openness' was found as a common one. When core common characteristics of creative teachers were studied by Hobelman, Barkan and Wessel (as mentioned in Torrance, 1962) resourcefulness was found to be a common characteristic. Therefore openness and resourcefulness were added. The description of each factor (P. 72-75) and the diagram showing the interrelationship among the factors of creativity in teaching would be available on Page 76.

Environment played a very important role in creative thinking. The factors of environment that help to accelerate the process of creative thinking were -

1. less criticism
2. availability of a creative role model
3. decrease in oppression and exclusion.

One more aspect was the motivation. Amabile (1983) noted that motivation rather intrinsic motivation was a necessary thing. All these aspects were taken into consideration while planning the programme.
Initially the researches related to creativity were gathered. They were classified into following broad areas -

1. Nature of creativity
2. Correlates of creativity
3. Measurement of creativity
4. Development of creativity and
5. Quality improvement measures in case of teacher education programme.

The studies collected by the researcher are given on page no.80.

The major trend in creativity research was to study the correlates of creativity. These correlates were either from sociological or psychological or academic point of view. Sociological factors with which creativity was found associated were mainly sex, age, birth order, caste, religion, rural-urban upbringing and socio-economic status. The findings were contradictory and hence confusing. Therefore, the researcher decided to find out the relationship between exposure (operational definition on P.29) and Creativity in Teaching, as sociological factors basically decided the 'exposure' of an individual.

In case of psychological factors, there were some studies in which relationship between locus of control, emotional stability, autonomy and creativity was found out. Individually these factors were found highly correlated with creativity. Hence the researcher decided to find out the relation between their combined effect i.e. emotional intelligence with Creativity in Teaching.
The researcher found the studies reporting preparation of test measuring creativity in general or in case of a particular school subject. It was found that the factors measured mainly were fluency, flexibility, originality and elaboration. In case of studies from abroad creativity was measured on the basis of personality factors. These factors were the perceptions of a respondent about creativity.

When an effort to find out the studies regarding development of 'creativity', was made number of studies could be located. Majority of them were for school children. One was for D. Ed. student teachers whereas no study was found for the development of creativity in teaching for B. Ed. student teachers.

Thus, review of related literature helped the researcher to finalize the factors of creativity in teaching and relationship between them. It became helpful to have an insight for preparation of test measuring creativity in teaching and also in preparation of programme of development of creativity in teaching.

7.09 : Chapter III - Procedure

This chapter mainly dealt with the method of tool finalization. It had made a reference to selection of research methodology and related decisions.

The researcher could not get any standardized test regarding creativity in teaching. Therefore a test measuring creativity in teaching was prepared by the researcher.
The process of preparation of final draft of test consisted of following steps. They could be mentioned here in brief.

1. Test items measuring factors of creativity in teaching were prepared and a first draft of test was formed.

2. This draft test was shown to the experts in the field i.e. teacher educators and experienced school teachers and was modified in the light of their suggestions.

3. It was given to 37 secondary school teachers from and nearby Sangamner and their responses were analysed.

4. While analysing, the need of resolution of the factors of creativity in teaching was felt, to overcome the difficulties in scoring. It was modified accordingly.

5. A manual for scoring was prepared.

6. The test was given to 29 D. Ed. student teachers as a pilot study.

7. A standardized test of creativity thinking i.e. Torrance Test of Creative thinking (TTCT) (Marathi version) was also given to D. Ed. students. The validity and reliability was tested.

   The reliability of test (through split half method) was $\gamma = 0.81467$

   Its coefficient of correlation with TTCT (standardized test) was $\gamma = 0.5118$ and was significant.

   for df = 25, $\gamma = 0.381$ at 0.05 level

   $= 0.487$ at 0.01 level.

   It could be said that the researcher made test of creativity in teaching is valid.
8. This tool was used for survey following the same instructions everywhere.

9. The researcher used one more test. It was of 'emotional intelligence', prepared by Goleman and others. The researcher got it on a website. She downloaded it and translated it into Marathi for use. (Appendix B)

7.10: Chapter IV - Analysis of Student teacher's profile

This basically was an experimental study; however, a survey of B. Ed. colleges of University of Pune was conducted for understanding the present status of Creativity in Teaching of student teachers.

One more objective behind this survey was of studying the relationship between creativity in teaching and social factors and, also between creativity and innate factors.

The survey was conducted in an academic year 2004-05. Total 16 Colleges of Education from University of Pune were surveyed. Randomly selected 25% student teachers from Marathi medium were asked to respond to the test. The findings of this survey are:

1. The sample was homogeneous in case of both exposure and creativity in teaching.

2. There was significant and positive correlation between exposure and creativity in teaching.

3. There was significant and positive correlation between openness and exposure.
4. There was no significant difference in average exposure of rural and urban student teachers.

5. There was a significant difference in average exposure of male and female student teachers.

6. There was no significant difference between mean exposure of arts, commerce and science students.

7. There was significant difference between average exposure of rural male student teachers and urban female student teachers.

8. There was significant difference between average exposure of rural female and urban male student teachers.

9. There was significant difference between average exposure of rural male and rural female student teachers.

10. There was no significant difference between average exposure of urban male and urban female student teachers.

11. There was no significant difference between average exposure of urban male and rural male student teachers.

12. There was no significant difference between average exposure of rural female and urban female student teachers.

13. There was no significant difference in average score of creativity in teaching of rural and urban student teachers.

14. There was no significant difference in average score of creativity in teaching of male and female student teachers.

15. There was no significant difference between average score of creativity in teaching of Arts, Commerce and Science student teachers.
16. There was no significant difference between average score of creativity in teaching of rural male and urban female student teachers.

17. There was no significant difference between average score of creativity in teaching of rural female and urban male student teachers.

18. There was no significant difference between average CIT score of rural male and rural female student teachers.

19. There was no significant difference between average CIT score of urban male and urban female student teachers.

20. There was no significant difference between average CIT scores of urban male and rural male student teachers.

21. There was no significant difference between average CIT score of rural female and urban female student teachers.

7.11 : Chapter V - The Experiment

The experimental design selected for the study was 'Pretest-Posttest control group' design. The experiment was conducted at College of Education, Sangamner in Jan. 2005. From 80 student teachers of College of Education, Sangamner, of academic year 2004-05, two groups of 40 student teachers in each were formed by random selection and were randomly selected further as an experimental and control group. There was one more control group of 80 student teachers from S.S.B. College of Education, Shrirampur, having similar conditions. This was arranged to check the contamination. The programme was an independent variable and Creativity in Teaching was a dependent variable. There were some more independent
variables such as exposure, emotional intelligence which would affect the dependent variable.

The internal and external validity of this design was discussed in detail on Page No.200-201

A programme of enhancement of Creativity in Teaching was conducted on the experimental group in Jan. 2005. It was conducted for 22 days and for 35 clock hours.

The eight factors of creativity in teaching were dealt with in this programme. The principles of andragogy and constructivism were followed during the programme. Some in-built factors for creative thinking were group work, democratic classroom atmosphere, adequate scope to discussion and analysis, effective use of audio-visual aids, relevance of learning material.

The effectiveness of the programme was found out by post test. But their day to day learning was evaluated by a portfolio method, day to day assignments, and some self analysing exercises. A feedback about the programme was also collected and analysed.

A follow-up was also kept. After the programme, the student teachers went to various schools for their internship programme. It was found that they applied the programme contents i.e. the process developing creativity in the school. The record of their responses gave the glimpse of change in their cognitive as well as affective domain.

The prepared programme was conducted initially on 43 D. Ed. student teachers as a pilot study. After the experiment it was conducted on seven secondary school teachers as a replicability study.
7.12 : Chapter VI - Results

The experimental group and both the control groups were pre and post-tested for their 'Creativity in Teaching'.

In order to find out the effectiveness of the programme the data was analysed using ANCOVA.

Initially on-par relationship in all the three groups regarding creativity in teaching, emotional intelligence, exposure, Torrance test of creative thinking (TTCT) was checked by using ANOVA. It was found that all the three groups were equal regarding their creativity in teaching, emotional intelligence, exposure and on Torrance test of creative thinking, before the experiment. The difference in their scores was not significant and was due to random error.

When ANCOVA was used, it was found that $F = 92.29$, that there is a significant gain in Creativity in Teaching of experimental group. When the significance of difference between the adjusted means of 'CIT' of the three groups was computed, through 't' test, it showed that experimental group mean was significantly higher than the means of both the control groups.

Therefore both the hypotheses stated initially were accepted. They are:

1. Programme prepared for the development of creativity in teaching is found effective.

2. Average performance of experimental group of student teachers in case of creativity in teaching is significantly higher than control group.
The separate effects of the independent variables such as exposure, emotional intelligence, TTCT on the dependent variable were computed and were not found significant.

Hence to find out the effectiveness of their interaction, multiple regression analysis was used. It was found that the interaction of independent variables could predict only 32.7% of the dependent variable significantly.

Therefore it can be said that the interaction effect is not significant to overcome the effect of the programme. It meant that the programme was effective and caused the change in the Creativity in Teaching among student teachers of experimental group.

SECTION – II

7.13 : Implications of the study

The findings of the present study showed that creativity in teaching could be developed in case of student teachers by following certain principles using some techniques, appropriate learning material and creating specific classroom atmosphere.

The results have implications for -
- Policy makers
- Practitioners
- Professionals and for any individual.
They are as follows:

1) Teacher education programmes need such kind of input of creativity in teaching. At present such an input of Creativity in Teaching is not found in a syllabus of B. Ed. course of University of Pune and in the D. Ed. syllabus of July 2005 in Maharashtra.

Syllabus Committees of Teacher Education in universities need to have orientation programme for exposing them to the benefits of Creativity in Teaching. The change in the future teachers due to their participation in programme needs to be highlighted in Teacher Educators' meet.

NCTE has mentioned in the guidelines that the present teacher should be creative. Now it has to go one step further to introduce such programmes that would lead to Creativity in Teaching.

It can also be used for teacher education programme through distance mode by preparing self instructional material.

2. Since teacher educators play a key-role in teacher education institutions, training programme of creativity in teaching need be arranged for them as a refresher course. Through such a course it may become possible to control the factors that inhibit creative expression of student teachers and to remove the unnecessary restrictions on student teachers in the teacher education institutions. (In short, the programme has to initiate the process of creating openness in the atmosphere and in the teacher educators too).

3. The study has demonstrated that student teachers can start thinking creatively. Their classroom behaviour can be changed. Instead of
following the same routine, they may practice alternate ways, may undertake some innovative projects, and can generate new information/knowledge which school children will learn for their future in a meaningful way.

4. This programme can be used as an inservice training programme for secondary as well as primary teachers with some relevant changes in learning experiences. It can be made applicable to headmasters also.

5. As a life skill: This can be used as an input to personality development which consists of skills of listening, observing, thinking and problem solving. One most important input this programme provides is of openness. It is very essential to live in a democratic society. It can be said that this programme can become useful to improve the creativity of a layman. So various voluntary organisations that work for people at large for improving the process of decision-making can include such intentions of creativity.

7.14: Suggestions for further study:

Though number of researches have been undertaken on creativity in general; there are a few researches carried out in the area of development of creativity, that too at school level. Hence with reference to the present study, following topics can be suggested for further study:

1. The test of CIT used by the researcher was not a standardized one. The test of creativity in teaching can be standardized.
2. In this study all the process and product aspects were included. But to compare them, one group can be treated by process aspects of CIT and other group can be by product aspects only and as a result, their increase in CIT can be compared.

3. Separate programmes for openness, redefinition, elaboration can be prepared, executed and their effects can be measured.

4. Interaction analysis in classrooms based on the factors of creativity in teaching can be made. That would help teacher educators understand the differential significance of various factors of creativity.

5. A scale for a creative head master can be prepared and used to measure creativity of headmasters in school management. That would help change the atmosphere in the schools.

6. Analysis of question papers of exams of B. Ed. colleges on the basis of factors of creativity in teaching can be undertaken and the extent of creativity that is included and developed would throw light in the implicit orientation that exists in course contents in vogue.

7. This programme can be induced in content cum methodology workshop and its effects can be tested, so that direct relation to each school subject in terms of process and product factors could be though of in the context of specific subject structures.

8. The relationship between creativity in teaching and reading habits can be tested, so that creativity can be stressed through programme improving reading habits.
9. Relationship between experience of teaching and creativity in teaching can found out so that contribution of professional exposure and significance of the experience can be gauged.

10. Relationship between creativity in teaching of teacher educators and their student teachers can be studied.

11. A programme for increasing exposure can be prepared, implemented and its effect on creativity in teaching can be assessed.

**Summary:**

In this chapter, all the previous chapters are summarised. In the second section of this chapter, implications of the present study are mentioned. Some topics for further research are also suggested.

"*Reasoning draws a conclusion, but does not make the conclusion certain, unless the mind discovers it by the path of experience.*"

— Roger Bacon

(cited in BrainyMedia 2006)
References:

Websites:
