CHAPTER - III
PROBLEM AND OBJECTIVES

Most of the studies conducted on creative thinking were test construction and correlational studies. A number of studies had been made on the relationship between personality and creative thinking (Paramesh, 1972) and the way environment affects artistic thinking. Creative thinking and its relationship with intelligence and achievement has been studied by Sen and Aghi (1972), Basu (1982) and Reddy and Reddy (1983). A large number of studies were conducted taking different aspects of creative thinking but there were in literature very few studies regarding the development of creative thinking.

Now the question arises can anything be done to influence the development of creative thinking? Can the quality of creative thinking be improved through a special form of education? These were now few of the crucial questions of concern to educators. For the past 30 years educators and psychologists had developed various techniques and instructional materials to facilitate creative thinking. All the approaches share a common premise that training, practice and encouragement in using creative thinking skills can increase the degree of creativity manifested by individuals. How effective were these programmes in increasing creative thinking was one of the important question which would be investigated.
The training programme given in most of the studies concerning the development of creative thinking included Osborn's Brainstorming, Purdue creative thinking programme, and Torrance and Myer's book, productive thinking programme etc.

Torrance (1964) did not approve of the idea of work book which implies hard work on the part of the students. Instead, he called them idea books which implies fun and game like activities. Myers and Torrance (1964) have prepared a series of idea book which include exercises for developing intellectual skills involved in creative thinking.

Searching for published as well as unpublished research studies on creativity training was somewhat discouraging. Although the trend in education and industry is toward developing and using individual creativity, very little systematic research or programme evaluation had been carried out. While research on the Osborn-Parnes creative problem solving programme had been the most systematic and voluminous to date, the present amount of data was hardly sufficient to warrant an unreserved opinion of the programme's effectiveness. More systematic research with better and more thorough data reporting needs to be undertaken.

Cronbach (1970) propounded that most of these programmes moderately improve verbal creativity and that they had a strong impact on verbal originality. Since most creativity training relies on verbal activities in both training and practice, the disparity
in impact of training on verbal and figural creativity was to be expected. However, programmes designed to utilise figural exercises in training need to be researched more thoroughly.

PCTP constituted only a very small part of school programme and no ample time was given to develop the skill. For a successful brain storming of PCTP session, certain conditions conducive to free thinking had to be created. Most of the studies (Malhotra & Chopra, 1985; Anderson, 1963; Parnes & Meadow; 1959) indicated the efficiency of the brain storming technique in developing creative thinking. Taylor, Berry & Block (1958) observed that attempts to produce conducive conditions implied in brain storming experimentally, had yielded no evidence whatever for the so called brain storming phenomena. Tibant and Kelley (1959) also had mentioned the conflicting evidence on this issue. Whether group brain storming was better or individual brain storming was better is still a matter of controversy. In order to give a new look to the creativity developing programme, a different type of training programme would be tried out.

The studies reviewed so far, use certain techniques for creative teaching and support the general conclusion that creative thinking can be developed. But some contradictory results were also found by some researchers (Amram & Giese, 1968 a,b,c; Soar, 1968; Moslemi, 1973; Zelnick, 1973; Pillay, 1977; Staso, 1978). Amram and Giese (1968) got partial success in their attempt to
develop creative thinking through deliberate training. Zelnic (1973) designed his study to determine the effects of creative training on the reading comprehension of 277 children learning in 4th and 5th grades in twelve classrooms. It was concluded that creative learning experiences were not more effective. So also Ripple and Decay (1967) found no significant difference. Taylor and Hout (1990) also got same results. Masten and Hairston, (1989), Liman and Mainberger (1977), Cantor, Klein and Helfat (1979) also got negative effect. Unfortunately, even though there were hundreds of researches consistently providing evidence in favour of the teachability of creativity through organised teaching practices and new goals like teaching for creativity development are becoming increasingly common in other educational system, in India there seems to be general paucity of research activity in this area which remains virtually unexplored. There were exceptionally a few studies on the subject in this country and they too have failed to obtain consistent results. One can not authenticate one's view entirely on the basis of the foreign investigations especially about the questions related to the subject like development of creativity which is supposed to be sensitive to cultural differences.

In most of the experimental studies on development of creativity, duration of the experimental treatment was comparatively short. It ranged from 6 hours minimodule of Torrance (Torrance & Torrance, 1973; Herskey & Kearns, 1979; Carroll, 1980; Hutchinson, 1967) to four semesters training programme of Parnes (Parnes,
1973; Torrance, 1960; Meheta, 1981; Malhotra & Chopra, 1985; Gupta, 1977). It was sometimes objected that the effects of such short time training programme are temporary and non-transferable to other areas. It did not have any carry over effects (Staso, 1978). Studies involving long term intervention were conducted by Parnes, (1972); Huber, Treffinger, Tracy and Rand, (1979); Cantor, Klein and Helfat, (1979); Cunningham and Murphy, (1981); Upadhye, (1981); Claugue-tweet, (1981); Jarial, (1981) and Jaben, (1982). Indeed, longitudinal studies were missing in this field. Duration of intervention was one of the greatest importance in the area of development of creative thinking which was also controversial.

The development of creative thinking by deliberate training whether persists or not was also a matter of discussion. Most of the studies in this area had given test immediately after training. Very few followup studies were found like Maltzman (1960), Glover (1980), Masten and Hairston (1984), Parnes and Noller (1972), Staso (1978), Juncture (1979), Claugue-tweet (1981), Gold and Houtz (1984) and Barton (1984). The duration of gap given was also controversial. Some researchers stated that duration of gap must be short and others stated that creative thinking also persisted over years. Barton's (1984) study stated that there was no expected difference. Staso (1978) found that the delay test, TTCT verbal Form B administered after 2 weeks following the post test indicated
no significant difference. Glover (1980) stated that experimental subject scored more on the TTCT with word immediately after the followup. On the other hand, Gold and Houtz (1984) declared that creative thinking was stable overtime so also Parnes and Noller (1972) stated that Experimental group showed year to year improvement in creative thinking than the control groups.

In most of the studies, the sample taken were from the secondary school students of urban areas and of high and middle socioeconomic status groups. Sociocultural disadvantage was very much related to creative thinking. The effects of socio-cultural factor on creative thinking were studied by very few of the researchers. It was also reviewed that development of creative thinking was more crucial in case of younger children or children up to class five. Canter, Klein and Helfat (1979) found that younger children did better than old ones. Covington and Crutchfield (1965) also found that 5th graders do better than 6th graders. So there would be necessary to do study of other target groups such as socially disadvantaged tribal people and of primary school children.

Lastly, the choice of appropriate test to measure the variables of a study was also of quite important aspect. Several researchers attempted to develop various tests to measure creativity. Most prominent tests were Torrance test of creative thinking (Torrance, 1962, 1966), Guilford's, D.P. tests (Guilford and Merifield, 1969), Wallach-Kogan's test of creativity (1965) and Getzel and Jackson's test (1962) and remote association test of Mednic and Mednic (1962 and 1964).
Most of the tests were criticised for their low reliability and validity. McNemar (1964) complained that although considerable research had been conducted, relative little had been published about their validity.

Although all these tests were used more widely there were also some controversies regarding these tests.

Wallach and Kogan (1965) measured the variable of creativity by two related variables - the number of unique responses produced by the child (uniqueness or originality) and the total number of responses produced by the child (number of fluency). Thus, these scores reflect only the number and variety of responses not the quality of responses.

The Remote Association Test although had high reliability and widely used but mixed findings were reported on it. Mednic and Mednic : (1964) have got positive results, whereas Andrew (1965), Karlins (1967) Yaharn (1966) had reported negative results. This test had also cultural variability (Hood and Grinsburg, 1969). In solving the problem, the individual was required to arrive at the single correct answer which had been already selected by the experimenter (Paramesh, 1972).

Some tests have been standardised on Indian students of different age groups (Mehdi, 1973 a,b; Chauhan and Tewari, 1974; Passi, 1972; Kaul, 1973.) Many of them measured general
creativity but some developed to measure creativity in specific areas of content (Majumdar, 1973; Kundley, 1977). Only a few of the tests were published and now are commercially available Mehdi (1973), Chauhan and Tiwari (1974).

The selection of a suitable test to measure creativity had posed a problem, as the tests referred to in the researches published in the Indian Journals were not readily available. Almost all the Indian Standardised tests used the regional samples, for establishing norms and in certain cases, even a particular city sample, norms on national level were not available.

In view of the conflicting research findings which would need further probing of this problem, and in view of the questions raised here which are still unanswered as well as in view of the need of experimental studies in this area, it would go without saying that an investigation wherein certain organised creative training are envisaged to be used to create conducive condition in the classroom setting to stimulate, encourage and to develop creative thinking ability of the children would be welcome. This provides the rationale for the present study entitled "Development and persistence of creative thinking abilities in tribal children as a function of cognitive and affective intervention".

The major instrument needed was a suitable test of creativity which has got parallel forms since pre-post design would be adopted. None of the Indian standardised test had got parallel
form. TTCT was available with parallel form to test both verbal and nonverbal creativity ability. Since there was no test, other than TTCT, designed specifically to assess creative thinking in children and about which a large amount of data had been gathered, TTCT was given preference over any other creativity test. Torrance had developed a series of verbal and figural tests of creativity. The test had been used very popularly in hundreds of researches including many Indian studies, yielding highly reliable and valid results. Numerous studies were cited by Torrance (1972b) concerning the predictive validity of the TTCT for both short range and long range studies. The validity and reliability studies reported by the author in the test manual indicated that the test battery were highly reliable and valid to measure creative potential of the individuals. In all the six long range validity studies of TTCT the predictive validity reported mostly above .50 (.62, .57, .50, .46, .51, .51).

Further there were consistent findings that the test battery was free from racial, ethnic or socioeconomic bias (Torrance, 1971a) because the openended tasks included in it involve either the most common objects like toys, cardboard boxes, which were universally used or the simple pictures which were easily understandable and without cultural background around them. Grade Norms were established on the group which was multiracial and multi ethnic and a representative of the midrange of most school populations (Torrance, 1974). Therefore TTCT (Torrance, 1966) were selected as a criterion test to measure creative ability of children.
This investigation ventures to study the effectiveness of two different training programs in developing creative thinking viz cognitive and affective training programme.

There would be two experimental groups and one control group. The primary objective of the study would be to find out experimentally the effects of both forms of training cognitive and affective on developing creative thinking in tribal children.

The study has been designed to achieve the following specific objectives.

1. To devise a training programme for developing creativity of children.

2. To investigate whether the training programme has any effect on the development of creative thinking.

3. To investigate whether the changes that are the result of the training programme are permanent or temporary.

4. To study whether cognitive or affective aspects contribute more to the development of creative thinking.

5. To investigate whether level-I (divergent functions) level-II (complex thinking and feeling process) or level-III (involvement in real challenges) contribute more to the development of creative thinking.

6. To study the interaction effect of both cognitive affective aspects and level-I, level-II and level-III of the training material.
Hypotheses:

In light of the above objectives the following hypotheses were formed.

**Verbal creativity (Total):**

1. There will be significant difference in total verbal creativity scores between control and Experimental groups.
2. There will be significant difference among Verbal posttest creativity scores under different testing conditions.
3. There will be significant interaction between Treatment and conditions of posttest relating to total Verbal creativity scores.

**Verbal creativity (Fluency):**

1. There will be significant difference in verbal fluency creativity scores between control and experimental groups.
2. There will be significant difference among verbal fluency posttest creativity scores under different conditions of testing.
3. There will be significant interaction between Treatment and conditions of posttest relating to Verbal Fluency creativity scores.

**Verbal creativity (Flexibility):**

1. There will be significant difference in Verbal Flexibility scores between control and Experimental groups.
2. There will be significant difference in Verbal Flexibility creativity scores among different conditions of post-test.
3. There will be significant interaction between Treatment and conditions of posttest relating to Verbal Flexibility creativity scores.
Verbal creativity (Originality) :
1. There will be significant difference in verbal Originality creativity scores between Control and Experimental groups.
2. There will be significant difference in verbal Originality Creativity scores among different conditions of posttest.
3. There will be significant interaction between Treatment and conditions of posttest relating to verbal originality creativity scores.

Figural creativity (Total) :
1. There will be significant difference in Figural total creativity scores between Control and Experimental groups.
2. There will be significant difference among Figural posttest creativity scores under different conditions of testing.
3. There will be significant interaction between Treatment and conditions of posttest relating to total Figural creativity scores.

Figural creativity (Fluency) :
1. There will be significant difference in Figural Fluency creativity scores between Control and Experimental groups.
2. There will be significant difference in figural Fluency creativity scores among different conditions of posttest.
3. There will be significant interaction between Treatment and conditions of posttest relating to Figural Fluency creativity scores.

Figural creativity (Flexibility) :
1. There will be significant difference in Figural Flexibility creativity scores between control and Experimental groups.
2. There will be significant difference in Figural Flexibility creativity scores among different conditions of posttest.
3. There will be significant interaction between Treatment and conditions of posttest relating Figural Flexibility creativity scores.

**Figural creativity (Originality):**

1. There will be significant difference in Figural Originality scores between Control and Experimental groups.

2. There will be significant difference in Figural Originality creativity scores among different conditions of posttest.

3. There will be significant interaction between Treatment and conditions of posttest relating to Figural Originality creativity scores.

**Figural creativity (Elaboration):**

1. There will be significant difference in Figural Elaboration creativity scores between Control and Experimental groups.

2. There will be significant difference in Figural Elaboration creativity scores among different conditions posttest.

3. There will be significant interaction between Treatment and conditions of posttest relating to Figural Elaboration creativity scores.