CHAPTER III

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CHAPTER III

REVIEW OF PAST RESEARCHES

3.1 Introduction

A review of the related literature is an initial step for any research work. As pointed out by William Viersma:

"Educational research is not or at least should not be carried out in an information vacuum."

The present study has two major objectives: Its first objective is to assess the creativity mean scores of the BC and Non BC students studying in different standards of secondary school of rural and urban areas. The second one is to study the creativity of boys and girls of secondary schools in relation to institutional open and closed climate. Keeping in view these objectives, the nature of the present work, the review of the related research literature has been undertaken in two parts:

(i) Review of the work done in creative measurement.

(ii) Review of the work done in the field of creativity and creativity vs. environment / institutional climate.

3.2 Outline of Review Work

The past research is examined step by step. Hence, the same is divided in three sub-parts:
(i) Creative test construction done Abroad and in India.

(ii) Research work in creativity.

(iii) Research work in creativity vs. environment.

The correlational study of researches in creativity is made keeping in view the various correlates as shown in the classifications identified below:

(a) **Creativity and Personality**:

It is related to personality of a creative child, creativity and personality, growth and trends of creativity, components, personal variables and second order personality correlates of creativity. Creativity is related to the value of the Indian adolescent students.

(b) **Creativity and Intelligence**:

Different researches on creativity have related creativity with intelligence, creative thinking with special reference to intelligence, creativity and its components as affected by intelligence and relationship of intelligence and fluency among students are included in this field.

(c) **Creativity and Education**:

It gives the review of different researches like education, teachers, creativity and family background. Study of relationship of creativity and
academic achievement among secondary school children, creativity as related to achievement motivation and birth order.

(d) **Researches on Creativity:**

This is a branch of research field in creativity which is most important and yet a few researches have been completed. Some well-known researches are listed here e.g. Special Programmes for developing creativity, techniques for the development of creativity, creativity problem solving and divergent thinking, transcendental meditation etc.

(e) **Creativity and its measurement:**

This includes the trends and status of testing in creativity, problems in measurement of creative thinking and their users.

(f) **Creativity and environment:**

It gives the review of different researches such as creativity vs. socio-economic status, caste, school climate, classroom climate and home environment.

In light of these classifications researches related to the problems will be discussed.
3.3 Review of Test Construction

A good amount of work in the field of creative test construction has been done in foreign countries, especially in the U.S.A. Some research work pertaining to creative test construction has been done in India too. Here the investigator has reviewed the various types of creative tests construction in two phrases:

(a) Creativity Test: Abroad
(b) Creativity Test: India

3.3.1 Creative Test: Abroad

Study-1: The Minnesota Tests of Creative Thinking by E. Paul Torrance

Nature of Test:
- Individual and Group Test
- Non-verbal Test (Tasks)
- Verbal tasks using non-verbal stimulus
- Verbal tasks using verbal stimulus

Part I: The non-verbal test of creative thinking consists of three sub-tests namely:

(a) Incomplete Figure Task:

First, the test administrator gives examples for the first incomplete figures. Children can add some lines and sketch some
objects or designs and make up little for each picture. It provides the subject with an unlimited opportunity to make responses and also encourage free play of imagination and originality.

(b) **Picture Construction Task:**

This test of creativity is intended to measure the individual's ability to deal with figural content in a creative manner. Unlimited opportunity is given to think about the picture construction. It provides opportunity to use his imagination with different types of figural tasks and come out with novel idea. Originality and elaboration can be measured by this activity.

(c) **Circles and Square Tasks:**

In this part circles and squares are printed on a sheet of paper. The following instruction is given: "Prepare as many pictures as you can and label each of them." He is provided unlimited opportunity to prepare various picture of a different category. Here fluency, flexibility and originality can be measured.
Part II: Verbal tasks using non-verbal stimuli of creative thinking consists of three sub-tests namely

(a) The Ask and Guess Test:

In this test printed picture is given to the child. The child sees the picture. Reasoning and thinking process goes in this mind. The curiosity of the child can be watched here. Unlimited number of questions are suggested by the child. The questions are of two types:

i) Answer of the questions after watching the picture.

ii) The questions which cannot be replied by looking at the picture.

(b) Product Improvement Tasks:

In this test fluency, flexibility and originality can be measured. Interesting materials (toys, dress and any other tools) are given. The child can use this material and prepare various types of articles. Afterwards the tester can examine keeping in view the newness, reality, productivity and magic power.
Part III: Verbal test using verbal stimuli of creative thinking consists of ten sub-tests namely:

(a) **Unusual uses**:

It measures the subjects' ability to creative items of information from his personal information in storage. It also measures the subjects' ability to sort out frames of reference to use the environment in an original manner.

(b) **Impossible Task**:

Imaginary power can be judged. Originality, fluency and flexibility can be measured.

(c) **Consequences**:

This test measures the dimensions of fluency and originality.

(d) **Just Suppose**:

In this test imagination can be measured. Flexibility and fluency can also be measured.

(e) **Situations**:

Subjects are told that they would be given three common problems and they would be
asked to think of as many solutions of these problems as possible.

(f) **Common Problems:**

Subjects are instructed that they would be given two common situations and they would be asked to think of as many problems as they can which might strike in connection with these situation.

(g) **Mother Hubbard Problem:**

The administration of this task has stimulated a number of ideas concerning factors which inhibit the development of ideas.

(h) **Cow Jumping Problem:**

The task is to think of the possible things which might have happened when the cow jumped over the moon.

(i) **Imagination Stories:**

Titles are given from which imaginary stories should be written.

**Study-2: Kogan-Wallach Test of Creativity**

Kogan and Wallach developed a test of creativity that includes two parts.

(i) Verbal, (ii) Figural
Part - I : Verbal Creativity :

It includes three verbal techniques :

(a) **Instances** :

Here a child is asked to generate possible instances of a class concept. The items are included in this technique they are as under :

i) Name of all the round things you can think of

ii) Name of all the square things you can think of

iii) Name of all the things you can think of that will make noise and sound.

(b) **Alternate uses** :

Here a child is to generate possible uses for a verbally specified objects. The following items are included in this technique, they are as under :

i) Tell me all the different ways you can use a newspaper.

ii) Tell me all the different ways you could use a knife.

iii) Tell me all the different ways you could use a chair ... etc.
(c) **Similarities**:

Here a child is to generate possible similarities between two verbally specified objects. This technique is composed of ten items like:

i) Tell me all the ways in which a potato and carrot are alike.

ii) Tell me all the ways in which a cat and a mouse are alike.

iii) Tell me all the ways in which a train and a tractor are alike ... etc.

**Part - II : Figural Creativity**:

There are two types of creativity assessment technique involving visual rather than verbal stimulus material.

(a) **Line Meanings**:

Here the child is provided with one or another kind of a line and he is asked to generate meanings or interpretations relevant to the form of the line in question. The variables of similar responses and number of responses are scored for each item and are summed across for the total creative score. The reliability of score has been established by two ways:
i) Split-half reliability of each measure that changes from 0.51 to 0.93.

ii) Items of some correlations for each of 10 measurement with the total creativity score were computed.

(b) Pattern Meaning:

Here the child is to generate possible meanings and all interpretations for each of the visual design.

3.3.2 Creativity Test: India

Study-1: This creativity test by Chauhan and Govind Tiwari:

Nature of Test:

Verbal, individual and group both.

Age group: Adolescents and Adults

Time duration: Three hours

Availability Source: Agra Psychological Cell, Agra:

This creativity test is a multi-dimensional set of five questionnaire scales. This test provides scores for five of the eight components of creativity. This test is in line with Guilford but two components differ from the Guilford test of factors. This test is stated after formation of good report. The subjects read the test themselves and
answer by writing on the answer booklet provided to them. The scores are obtained both on quantitative and qualitative dimensions. The manual remains the guide scores for the five components that are obtained separately. The single score of creativity is obtained from the I score table. This test also provides scores for various sub-components of fluency and flexibility. The T-score table is useful for this purpose.

Study-2 : Creativity Test by Baquer Mehdi

Nature of Test : Verbal, Non-verbal, both, individual
Norms : VII and VIII class pupils

The Mehdi’s non-verbal test of creativity is intended to measure the individuals’ ability to deal with figural content in a creative manner. Three types of activities were used for this purpose; picture construction, picture completion and triangles and ellipses. The three activities taken together provide simple opportunity to the subjects to use their imagination with different types of figural tasks and come out with some novel ideas.

Parmesh C.R. (1970) used the Kogan Wallach test of creativity in his research study at Madras University.
Recently (1981), the Hindi adoption of Kogan and Wallach's creativity test was introduced by M.G. Husain. This test is based on three tasks with a few items in each. It is usable to the age group of their similar age group. It is scored for number, uniqueness and total creativity both for each task as well as total tests. It is widely used by project students and persons interested in the field of creativity.

The details of this test was not available from the persons concerned nor the survey report. Hence the investigator has taken a note of their work, in this review chapter.

Study-3 : The Creativity Test by B.K. Passi

Nature of Test : Verbal, Non-verbal, Individual and group (Both Hindi and English)
Norms : School children
Availability : National Psychological Corporation, Agra.
Source

The Passi Tests of Creativity (both in English and Hindi) are developed for the purpose of measuring creativity in school children. In all, six tests, namely : (i) the Seeing Problem Test, (ii) the Unusual Uses Test, (iii) the Consequences Test, (iv) the Test of Inquisitiveness, (v) the Square Puzzle Test and (vi) the Block Test of Creativity, are
included in the test battery. These tests are classified on the lines of Torrance (1962) as follows:

(a) Tests consisting of Verbal tasks, namely the Seeing Problems Test, the Unusual Uses Test and the Consequences Test,
(b) Test with verbal response tasks using mostly non-verbal stimuli, namely, the Test of Inquisitiveness.
(c) Test consisting of non-verbal tasks comprising the Square Puzzle Test and the Block Test of Creativity.

The nature of the Test of Creativity permitted freedom of responses both qualitative and quantitative within specified time limits, thus ensuring suitability of the tools for measuring divergent thinking. Instructions and practice items are provided before the actual commencement of the administration of the different tests. The subjects are supposed to write their responses in the answer book provided for the purpose. All the test are available both in Hindi and English. Responses are acceptable in any one of the known languages like English-Hindi etc. A brief and specific outline of all the six tests of creativity is given in the following captions:
(i) **The Seeing Problems Test**: It is a verbal, and an individual and group administered test. The Seeing Problems Test was developed by adopting the pattern followed by Guilford, et al. (1952). It is designed to measure a factor of sensitivity to problems which is a component dimension of creativity as described by Guilford. The test is proposed to measure the ability to comprehend problems concerning the working of simple and handy article of common use. The test of Seeing Problems includes four items, namely, shoes, pen, chair and post-card. The maximum time limit for the test is kept eight minutes so that two minutes could be devoted to each of the items.

(ii) **The Unusual Uses Test**: It is a verbal, and an individual and group administered test. This is designed on the lines of the Brick Uses Test by Guilford et al. (1952) and Torrance's (1962) the Unusual Uses Tests. This test includes the names of things which could be used for numerous purposes. It includes only those items which have proximity with the psychological and physical environment of the subjects. The test of Unusual Uses includes two items, namely, piece of cloth and bottle. The subjects are
expected to write down as many interesting and unusual responses to each stimulus article as they can. The maximum time limit for the test is kept eight minutes so that four minutes could be devoted to each of the items.

(iii) **The Consequences Test**: It is a verbal, individually and group administered test. The pattern of the test is based on the test of Guilford, estal (1952) and Torrance (1962). The test measures the dimensions of fluency, originality and creativity. (Creativity score is the sum of the scores of fluency and originality). The Consequences Test includes four items, namely, "If human beings start flying like birds", "If all houses start flying", "If all people become mad" and "If all female become males". The maximum time limit for the test is kept eight minutes so that two minutes could be devoted to each of the items.

(iv) **The Test of Inquisitiveness**: It is verbal, and an individual and group administered test. In order to provide an unfamiliar and novel situation, the test includes a relatively less familiar object providing sound and movement as the test content a metronome. In order to provide a situation for greater
inquisitiveness a playcard being in capital letters, "A FEW CHILDREN CANNOT TOUCH IT", is displayed alongwith the metronome in a working condition.

The subjects are expected to imagine and write as many questions as possible within six minutes. They are told that the questions should be mutually exclusive to one another in contents and meaning. The test, thus, presents the non-verbal stimuli but the responses are to be accepted in writing in any of the language - English, Hindi or Mothertongue.

(v) The Square Puzzle Test (Test of Persistency):

It is a nonverbal and an individually administered test. The rationale, for including the dimension of persistency in creativity was, firstly based on the comments made by Eysenck (1947) about the significance of persistency for the effective use of a person's ability and secondly on the plea of Fernald (1912) that 'The success or failure of individuals depend largely on the ability to endure and continue to strive for the sake of achievement inspite of fatigue and discouragement.
The present test aims at measuring persistency with the help of a performance test. A difficult situation is set-up for the subjects with the help of a puzzle - The Square Puzzle Test.

The Square Puzzle Test consists of five identical right-angled triangles and five identical quadrilaterals made-up of plastic. Instructions are clearly laid down for constructing a square by using all the ten given plastic pieces without leaving any gap for overlay in between the pieces. The response square can be constructed in more than one way so that if any subject happened to construct the square before the maximum time of 40 minutes, he is asked to take a chance to rearrange the pieces in different combination to get a square again. The square of persistency is considered as the time taken in complete minutes on the task.

The Blocks Tests of Creativity (BTC): It is a non-verbal and an individually administered test. The Block Tests of Creativity is a performance test and is administered individually. This test chiefly follows the pattern of the Lowerfield Mosaic Test LMT (1952) which was described by Ames and Frances.
(1962) as useful tool for providing greater opportunity to observe individuals engaged in performing dynamic designs.

The Blocks Test of Creativity consists of nineteen identical cube (1" X 1" X 1") and twelve diagonally cut semicubes (cut from six cubes of 1" X 1" X 1" dimensions). The material provided two types of block and three types of surfaces namely square, rectangles and right angled triangles. The six surface of the cubes are painted in red (top), blue (bottom), yellow (face), green (back), white (left side) and black (right side). The twelve diagonally cut semicubes have in all twenty-four right-angled triangular surfaces twenty four squared surfaces and twelve rectangular surfaces. These twelve semicubes are so cut that the four triangular faces of each colour can be obtained. The rectangular faces obtained as a result of cutting the cubes diagonally are painted brown colour. In this way, the test material employed a colour scheme consisting of seven different colours. The subjects have the option of using two types of blocks, three types of surface, and seven types of colours in different combinations simultaneously. Besides this a
10" x 10" wooden board covered with a white paper is also provided to be used as a base for assembling the blocks to make designs or structures.

The subjects have to produce as many interesting and unusual design as can be possible in ten minutes. They are further required to write down the headings of designs. While students are busy in constructing designs, the investigator is simultaneously drawing the figures of these designs, so that this record may be used for scoring and analysis of the responses at a later stage. The scores of fluency, flexibility, originality and creativity (creativity score is the sum of the scores of fluency, flexibility and originality) are proposed to be scored from the designs and structures developed by the students.

3.4 Review of the Researches in creativity and in environment

Study-1: Creativity as a function of interest, intelligence and culture:
K.N. Sharma submitted a Ph.D. thesis to Agra University, 1971. The review of this research study is briefed as follows:
Objectives:

The main objectives of the study were:

i) to study the effect of intelligence upon creativity;

ii) to study the effect of interests upon creativity;

iii) to study the effect of culture upon creativity;

iv) to study the interacting effects of intelligence and interests upon creativity;

v) to study the interacting effects of intelligence and culture upon creativity;

vi) to study the interacting effects of interests and culture upon creativity;

vii) to study creativity as affected by the interaction of intelligence, interest and the culture simultaneously.

Findings:

i) High intelligent subjects were significantly higher in creative thinking than the subjects of low intelligence.

ii) In both the urban and rural samples, the creative thinking showed significant progressive trends with intelligence up to the I.Q. of 120 or so and thereafter no progressive trend was observed clearly.
iii) Literary and agricultural interests did not affect creativity.
iv) Interest in fine arts affected creativity to some extent.
v) Science, medical, technical, crafts, outdoor sports and household interests showed inconsistent effects on creativity.
vi) The rural sample was found to be more creative than the urban one.

Study-2 : Creativity Evolving Test

K.Ramachandrarachar submitted a Ph.D. thesis to M.S. University, Baroda, 1975. The review of this research study is briefed below:

Objective : The objectives of the study were:

1. To evolve a test which differentiated creative and non-creative children.
2. To study analytically the nature of factors contributing to the phenomenon of creativity described by test.

Sample : The sample consisted of 426 standard IX children of six secondary schools of Gujarat and Mysore State. A final sample of 370 students was selected for items analysis.

Study : The test was constructed to identify creative children by testing the following factors:
A pilot study was conducted with a view to construct the final test. The items for the final test were selected from the items of the pilot study after proper screening. Split half reliability based on separately timed parts. Of the test corrected to full length by Spearman-Brown formula was found to be 0.86. The reliability by using K.R. Formula was found to be 0.71. Validity coefficients were found to be between 0.18 and 0.44 on different criteria.

Findings:

1. Creative individuals were relatively more fluent and gave a wide variety of responses.
2. Creative individuals preferred indirect literary expressions to direct ordinary expression.
3. The non-creative shows less or no elaboration.
4. Creative children in general indicated the above average performance on the two symbolic abilities.
Study-3 : An Analysis of certain dimensions of Creativity

Jha S.K. submitted a Ph.D. thesis to M.S. University, Baroda, 1975. The review of his research study is briefed below:

**Purpose** : The main purpose of the study was to explore and analyse certain personality dimensions and to obtain some personality profiles of creative persons.

**Sample** : The final selected sample consisted of sixty six creative persons. Out of sixty six data only thirty five persons could be collected. Data on a questionnaire having eighty statements were collected. The data were further supported by a self data card filled by the respondents. The data were subjected to factor analysis by employing centroid method.

**Findings** : The main findings of the study were related to the following four factors:

1) The first factor emerged with the description of the creative person as having rational optimism, high ego strength, realistic and healthy attitude towards life, openness to experience, assertive self confidence, and tendency for self-actualisation.
(ii) The second centroid was a bipolar factor having high positive loadings with religious dedication, religious mystical, fatalistic, and faith in supernatural powers, whereas it had negative loadings with practical non-religious, out-spoken and self confident.

(iii) The third centroid was also a bipolar factor having high positive loading with mystical intuitive guidance from inner self, whereas it had negative loadings with non-mystical, industrious, exerting and extrovert behaviours; and

(iv) The fourth bipolar centroid was positively loaded with self expression, openness to experience flexible value orientation and negatively loaded with fixed value orientation, methodical, social, extrovert and sensational type of behaviours.

Study-4: An Analytical Study of Creative Ability:

M.N.Deshmukh submitted a Ph.D. thesis to M.S.University, Baroda, 1978. The review of her research study is briefed below:

Aim: It aims to indicate desirable changes which must be brought about in the day-to-day teaching to create conducive climate in the class room.
It has been undertaken with the following specific objectives in view:

1. To find out the extent to which the theoretically postulated creative teaching practices are being used in the present classrooms.

2. To find out the potentiality of the theoretically postulated creative teaching in Indian classroom in terms of gains in creative ability.

3. To study the comparative effect of the original teaching practices viz., theoretical role-playing and brainstorming on the development of creative ability and scholastic achievement.

4. To study the differential gain in creative ability of pupils having varying levels of intelligence and initial creative ability.

5. To study the influence of sex difference on creative ability of the pupils.

6. To study the relationship between intelligence and creative ability.

7. To suggest measures for incorporating application of the findings of this study in the educational system to make it more meaningful, lively and effective.
Instrumentations:

To collect the data on these variables, the following tools were used:

3. Socio-economic status scale by Kappuswamy.
5. Torrance Test of Creativity Thinking, 1966.
7. Students Reaction Schedule by investigator.

Sample: For the experiment one school was selected from those 20 schools. It was Vidarbha Buniyadi High School, Dmnagar, Nagpur. This school is open for all and is moderate in size. It was, therefore, considered as a representative one and was selected for the experiment.

After pre-testing the experiment started in the second week of January and continued for six weeks. 33 lessons including 3 practical lessons, were taken, 5 lessons a week for each of experimental groups.
Conclusions: When the two approaches, i.e., role playing and brain storming were compared, brain storming was found more effective than role playing in establishing better teacher-pupil rapport, in explicit encouragement to unusual responses and creative thinking and more interesting to students.

The ANOVA result indicated significantly higher to scholastic achievement in Marathi language for the students taught through brain storming and role playing than the traditionally taught students, when the initial differences in achievements were adjusted.

The results of the study indicated significant sex differences in creativity among VIII grades. In general, girls were found more creative than boys. It is therefore concluded that creativity and intelligence are moderately related at the lower level of I.Q. and that there are sex differences in this relationship i.e. girls high on intelligence tend to be more creative than boys.

Study-5: Correlates of Creativity in India:

Raina M.K. submitted a Ph.D. thesis in Rajasthan University, 1968. The review of his research study is briefed below:
Aim: The aim of the study was to compare quantitatively significant differences between high creative and low creative groups of students on creation measures of cognitive abilities.

Hypothesis: High and Low creative groups would differ from each other with regard to certain cognitive abilities, personality characteristics, socio-economic status and sex.

Tools used:
2. Kuppuswamy’s socio-economic status scale.

Sample: 500 students of Std.VII, IX, X of Rajasthan Zone.

Findings:
1. The higher creative sub-groups scored significantly higher than the low creative sub-groups.
2. A comparison of the high creative males with the low creative males elicited significant differences between groups.
3. The high creative students scored significantly higher than the low creative with respect to academic achievement.
4. The high creative males showed greater achievement autonomy, dominance, endurance and aggression than the low creative males.

5. The low creative males exhibited greater difference and heterosexuality.

Study-6: Development of Creative Thinking Ability:

Development of creative thinking abilities from Grade III to VIII by D.R. Sudeh Gakhar, Department of Education, Punjab University, Chandigarh, 1975.

Aim: This study is an attempt to examine the pattern of creative development from third to seventh grade so as to see if any decline similar to that of Torrance (1962) is noticeable at the age of nine years. Sex difference in respect of growth pattern have also been examined.

Design: A cross sectional design has been used by involving age group 7th to 11th representing grade three through seventh.

Sample: A mixed sample of 75 boys and 75 girls was drawn by selecting thirty children (15 boys and 15 girls) from various sections of grade three, four, five, six and seven, out of two Government Schools in Jullundhur city. The mean age of the five groups of children from grade three to seven is 7.4, 8.4, 9.4,
10.3 and 11.4 years respectively. Age has been taken completed at the first section of testing.

Tests: Torrance test of creative thinking was administered to a group of 15 subjects at a time in their respective classrooms. Responses were scored in respect of fluency (F), flexibility (X), Originality (O) and Elaboration (E) by a trained scorer.

Results and Discussion:

Results indicate that while fluency, flexibility and total creativity tend to develop progressively from age 7th to 11th (grade third through grade seventh) the general tendency of the two abilities, that is originality and elaboration is to show a decline at a age in their progressive growth from 7th through 11th years.

Results pertaining to sub-samples of boys and girls separately are more or less similar to those obtained for total sample. The mean performance of both boys and girls on creativity measures depicts a progressive increase from 7th through 11th years punctuated with a decline at a age on originality and elaboration.

This decline is more noticeable in case of girls (t=2.01 and 3.94 on O and E respectively) than
boys which needs further validation and expression in the light of Torrance (1962), who remarked that the marked decline at the age of nine years was accompanied by problems of behaviour, learning difficulties, delinquency and personality disturbances. The casual factors of greater decline among girls as compared to boys may be looked into cultural and other nurturing patterns which tend to differ during the growth period of boys and girls.

**Study-7** : A correlational study of intelligence and various components of creativity:

The correlational study of intelligence and various components of creativity by Brudaban Chandra‡ Mishra, Lecturer in Education, G.M.College, Samalpur.

**Hypotheses** :

1. There is relationship between various measures of creativity (Fluency, Flexibility, Originality and Elaboration).

2. There are differences in the relationship of intelligence with verbal and non-verbal creativity.

3. There are differences in the relationship between intelligence and various components of creativity for high creative, average creative and low creative groups.
Sample: The sample for the study consisted of 125 high school students (boys and girls) studying in standard X who were drawn randomly from four high schools in the district of Balasore (Orissa). The students selected were belonging to the age group of 15 years and the mean income of parents was Rs.500 per month approximately.

Tools: Data on both verbal and non-verbal creativities were collected by using the Torrance Tests of creative thinking (verbal and non-verbal). Scoring of the tests was done according to the procedure described in the manual. The obtained raw scores of various components of verbal and non-verbal creativity were converted into standard, with mean as 50 and S.D. as 10, some of the standard scores constituted the composite creativity score of the subjects. The Raven's (1960) Standard Progressive Matrices Test was used to measure the intelligence of the students. It presents 60 problems requiring an individual to comprehend meaningless figures provided for observation to see the relationship between them.

Result: The finding of the study showed that creativity and intelligence are significantly related but only up to a certain extent. Beyond that they are independent of each other.
Conclusion:

1. Three out of four components of creativity (fluency, flexibility and originality) are found related with intelligence for total sample.

2. The value of correlation decreases when the total sample is divided into three levels of creativity.

3. Verbal creativity has higher values of relationship with intelligence than the non-verbal creativity.

4. Most of the components of creativity are significantly related to intelligence among average creative groups.

Study-8: A comparative study of creative thinking in relation to socio-economic status, school climate and classroom behaviour of high school in Baroda city (India) and Bangkok city (Thailand), Ph.D. Edu. M.S.Uni. 1978, by Adisai G.A.

Objectives: The major objectives of the investigation were:

1. To compare the creative thinking of Indian students and Thai students.

2. To study the relationship of the creative thinking of high school students of India and
those of Thailand in accordance with their socio-economic status, school climate and class-room behaviour.

3. To study the interaction effect of country, socio-economic status, school climate and class-room behaviour upon creative thinking.

Sample: The study employed a sample of 300 Indian students and 300 Thai students of Grade IX in the age range, 13+, 10+ years and a sample of 18 Indian teachers and equal number of Thai teachers.

Tools: The tools used were Passi Test of Creativity (verbal form), Torrance Test of Creative Thinking (Figural version form A and verbal version form B), Kuppu swamy's social economic status scale (Form B), organisational climate description questionnaire and Flanders interaction analysis category system. The statistical techniques used were t test factor analysis and analysis of variance.

Findings: The major findings were...

1. There existed a significant difference in the mean creativity between Indian and Thai students. The Thai students have higher mean score in all dimensions of creative thinking than those of the Indian country parts.
2. The students – Thai and Indian – from higher socio-economic status had more creative thinking than the students from lower socio-economic status.

3. The open school climate and closed school climate groups of Indian and Thai samples were found to have significant differences in the mean scores on Passi Test of creativity but the results were reverse as regards the dimensions of Torrance tests of creative thinking.

4. Different classroom behaviour groups both Indian and Thai, did not differ with regard to creative thinking.

5. There was no interaction effect among country socio-economic status and school climate or classroom behaviour of students upon their creative thinking in the Indian and the Thai sample.

6. Factor analysis gave four and six related varimax factors of Indian and Thai students, respectively.
Objectives: The investigation was undertaken with the following objectives:

1. To study and locate a few factors which go towards building up desirable class-room climate.
2. To study how these factors are interrelated.
3. To develop methods of deriving a simple, reliable, numerical class-room climate index using selected variables.

Sample: On the consequences of opinion and testing of a sample of 200 educationists including head teachers, faculty from teacher training college and other interested, six primary variables viz.,

1. $V_1$: attitude of teachers towards the pupils
2. $V_2$: attitude of teachers towards the profession
3. $V_3$: class-room ratio
4. $V_4$: T/S ratio
5. $V_5$: D/I ratio

These variables were selected for the study.
Tools: A questionnaire to teachers, a questionnaire to students and two attitude scales were developed for this purpose. A category system for observing classes in progress was also prepared. This system included, along with the first nine categories of the Flanders, Interaction analysis category system.

The following new categories were used:
1. Teachers demonstrates, uses aids etc.
2. Student demonstrates uses aids etc.
3. Teacher uses the black board.
4. Students use the black board.
5. Pupils work silently on a given assignment.
6. Mass response and
7. Silence/confusion/no work.

A hundred classes were observed (for full period) using the above tool. Immediately after the period, the questionnaires were administered to the students in the class and the teachers whose lesson was observed. The responses were suitably scored to yield measures on the six primary variables selected for the study.

Findings: Some of the major findings of the study were as follows:
1. The inter-correlation between the six variables showed that the variables $V_1$, $V_2$ and $V_6$ tended to cluster together with significant positive correlation.
2. The class-room climate in classes handled by women teachers was significantly better than the climate in classes handled by men teachers.

3. There was no difference in the climate of classes from urban and rural areas.

4. The climate prevailing in classes of different subject disciplines did not show significant differences.

5. Professional qualification, age or experience of the teacher seemed to have no influence on the class-room climate.

6. The class-room climate indicates correlated positively and significantly with school achievement of pupils.


Objectives: The main objectives of the study are as follows:

1. To investigate the relationship between home environment factors and some aspects of the school child.
2. Home environment factors included the family structure and size, interaction of family members, living accommodation and facilities, educational level, occupational status of father, social life, parents' attitude towards schools and teachers and interest taken in teaching the child, behaviour of the child and the parents' disciplinary technique.

3. Other aspects chosen were achievement, self concept and social adjustment of inter-relationship between the child and his classmates.

Hypotheses: The main hypotheses framed were:

1. The larger the family, the poorer was the child's achievement and self-concept.

2. Poor living conditions affected the child adversely in all the three aspects.

3. The higher educational level of the family the better was the child's achievement, self-concept and social adjustment.

4. The greater the parental interest and positive attitude in the child's school, the better was the child's achievement, self-concept and social adjustment.
5. A richer social life of the child went hand in hand with better performance on all the three variables.

6. Severe disciplinary technique had a harmful effect on the child's academic performance and self-concept.

7. The more the parents displayed affection towards the child the better would its self-concept be.

Sample: The study was conducted on a sample of fifty students from the same class of one school and their parents. Some case studies were also done.

Tools: The tools used in the study were interview schedule, observation, self-concept questionnaire, sociometric test and family attitude test.

Statistical techniques like Chi-square and mean were used in analysing the data.

Findings: The major findings were:

1. In a large family with many siblings the achievement scores were affected for the worst but not the self-concept scores to the same extent.

2. The belief about the superiority of eldest children proved false.
3. Material conditions did not significantly alter the scores in any variable.

4. The influence of educational status of the family members proved largely true but not father's occupation.

5. The influence of parental visits to school and teaching the child at home was proved to be false and so was parents' attitude to school and teachers.

6. The influence of parental aspiration, child's reading interests, parents and children sharing their leisure time together proved to be true.

7. A richer social life of the child helped him to a little extent in most aspects but especially in aspect concerning popularity and social adjustment.

8. The influence of parent's disciplinary techniques was proved beyond about in all variables.

9. Children from a joint family were not more popular than those who were allowed to mix with their neighbourhood friends.
The influences of the parents' display of affection was true to a large extent, especially with regard to the mother's.


**Aim** : The investigation aimed at the study of relationship between creativity, intelligence and socio-economic status.

**Sample** : The sample for the study consisted of 400 rural and 400 urban high school students drawn from sixteen intermediate colleges in Varanasi and Faizabad divisions.

**Tools used** : Joshi's test of mental ability was used for the assessment of intelligence, Bequer Mehdi's test was used for the measurement of creativity and information about socio-economic status of the family was collected with the help of a questionnaire.

**Statistical Technique** : The mean intelligence test score, the mean creativity scores, as well as the standard deviations for the different groups were calculated and critical ratios worked out to test the significance of the difference between means for the different groups.
Findings: The main findings of the study were:

1. The mean intelligence score of the urban students was significantly higher than that of the rural students.

2. The mean intelligence test score of the science students was significantly higher than that of the arts students.

3. In general, the socio-economic status of the urban students was higher than that of the students from the rural areas.

4. The mean creativity score of the urban students was higher than that of students from the rural areas.

5. The mean creativity score of science students was higher than that of arts students.


Objectives: The major objectives of investigations were:

1. To change the teacher's verbal behaviour by proper training and regular feedback programme.
2. To study the effectiveness of the inputs in bringing about changes in respect of organizational climate, leadership behaviour and teacher's morale.

3. To study the effects of sustained changed teacher behaviour on students' performance and

4. To study the effects of changed teachers' behaviour on variables such as pupils' academic motivation, adjustment, dependency, independency, initiative, activity level, classroom integration level and classroom climate.

Sample: The study employed present post test experimental control group design. The sample consisted of three groups of teachers (two experimental and one control). The experimental treatment consisted of intensive training with respect of FIACS (one group with feedback and another without feedback), organizational climate, leadership behaviour and teachers' morale.

Tools used: Data were collected by using FIACS, organizational climate description, questionnaire, leadership behaviour description questionnaire, and teacher morale inventory. The collected data were analysed using T test.
Findings: The major findings of investigation were:

1. As a result of teacher behaviour training and regular feedback, the teachers changed their behaviour in the experimental group.

2. There was increase in the use of categories 8 to 9 which led to increase in pupils talk in the experimental group.

3. Pupils academic motivation level was significant at 0.01 level in the experimental group.

4. The class-room climate components such as productivity, legitimacy, authenticity and total class-room climate showed significant mean gain scores, with respect to experimental group.

5. The increase was more in experimental group I than in experimental group II which was the result of regular feedback given to them during the experimental period.

Aim: The main aim of the study was to investigate the factors affecting class-room climate in relation to pupils' development.

Sample: The sample of the study consisted of fifteen English medium schools of Gujarat, Maharashtra and Goa, namely ten schools of the Apostolic Carmel, three schools of the Convent of Jesus and Mary and two schools managed by private bodies.

Tools used: The tools used for the study were the class-room climate scale, the classroom trust schedule, students adjustment scale, students' dependency scale, students' expectancy scale, sociometric scale, the socio-economic status scale.

Statistical Technique: Flanders interaction analysis category system, and academic and non-academic performance. The data were analysed by computing the means and standard deviations of the dependent and independent variables, applying test to each of the variables in order to investigate the significance of the difference of the means and computing the correlation matrix so as to study the interrelationships between various variables.
Findings: The major findings of study were:

1. Every class room had a distinctive and unique climate. The mean climate scores of the thirty class-rooms ranged from 104 to 166.

2. Class-room having the same climate scores had different authenticity, legitimacy and productivity scores.

3. Pupils from a higher class climate were better adjusted than pupils from a lower class climate.

4. More class-room trust was generated among pupils in class-room having a high climate.

5. Pupils in high class climates were more independent than those in low climate.

6. Even the less adjusted and more dependent pupils had a high expectancy level.

7. The climate of a class did not depend on the pupils trust, dependency, and independency and their expectancy; no significant correlation was obtained between the mean climate score and these variables.

8. The less direct the behaviour of teachers, the greater was the class-room climate.
9. A class-room with a better climate had fewer stars and isolates and consequently a lower class integration index.

10. The better the social relationship in a class, the higher was the class climate.

11. There was no significant correlation between the class climate and the academic performance of pupils, but the higher the socio-economic status of the urban students, the poorer they performed academically.

12. Pupils who achieved higher academically had lower expectations.

13. The socio-economic status of pupil did not affect the climate of a class.

14. Pupils from urban settings were less dependent than those from rural areas.

15. Pupils from rural areas had less expectancies and those from urban areas had higher expectancies. The relationship between expectancy and SES was significant.

16. Teachers were significantly more indirect in their behaviour with rural children.

17. The class climate of the schools managed by the Apostolic Carmel did not differ signifi-
cantly from that of the schools managed by the sisters of the Convent of Jesus and Mary, but the climate prevailing in the classrooms of the schools managed by the private agencies was noticeably lower than that prevailing in the classroom of the schools managed by the Apostolic Carmel and Convent of Jesus and Mary.

3.5 Rationale of the present Study

From the review work in the foregoing section the several points suggesting research for developing the creativity in a classroom are worth to be noted.

1. Many researches have been done for measuring the I.Q. of the children but very few researches have been done to measure creativity of the children. Hence, it is important to measure creative ability of school children.

2. Most of the researches in education are undertaken for the secondary school children but there is no such study overmade for the creativity measurement with relation to institutional climate of the secondary school children who are considered to be creative minded.

3. On comparing the creativeness of the B.C. and Non B.C. students studying in secondary schools a clear
picture of various levels of the creativity and its trends would be perceived in this study.

4. The challenges of the present world are legion. They require education to think differently. The students will have to learn how to think rather than what to think. Thinking process is a part of creativity. Thinking process is an important task in learning but to develop the process of thinking is different. Thinking is a skill and like an other skill it can be developed.
REFERENCES


