

CHAPTER - I

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THE PROBLEM

1.0 INTRODUCTION

“Imagination is more important than knowledge”

- Albert Einstein

Creativity is recognised as one of the greatest human asset. The story of civilizations from stone age to space age is a story of man's creative imagination. According to Osborn (1963) *“Imagination is the very essence of creative process”*. Every civilized act is a result of creative mind. The creative act, product of creative mind have led to all discoveries, inventions and advancements in all spheres of life. Problem solving ability of man is the result of this creativity in man. Every creative act adds new dignity to man and man's new dignity add to growth of civilization. Toynbee has rightly said *‘a few creative minds can make an enormous difference to civilization’*.

The creative ability of man, led him from mere state of existence to incomparable comfort and distinguished him from other beings in their struggle for existence. Man have shown astounding progress in all the fields of science, technology and aesthetics, to crown himself as the “Lord of Creation” which is nothing but a rich tribute to one of his unique abilities – the ability to create. It is this creativity in man which develop an unsatiated thirst in man to explore unknown worlds and pastures new and to voyage across, what Woodsworth, calls “Strange seas of thought”.

One always wonder whose imagination led to discovery of 'fire', 'wheel'. Mortal man may not be able to know whose creative mind was behind these. Only the creative act remain back.

Man always has an innate urge to create. Creativity is the "emergence of originals and individuality" (Anderson, 1959) is not only the right of poets, painters, artists or musicians. A first rate soup from an educated poor woman as Maslow (1962) observed may be more creative than a second rate painting or poem.

Creation is an expression of inner state of creator, it should be identified and nurtured to its fullest. Alternatively, satisfaction of the need to create will lead to happiness and intellectual freedom.

Torrance (1965) made out a case for proper evaluation of creative behaviour. He visualised the importance of the study of creativity in relation to educational goals, psycho – therapeutic goals and its social importance.

According to Lindgren and Lindgren (1965)

"Teachers favour intelligent, convergent thinkers over creative and divergent thinkers. Creative students are inclined to describe themselves as 'bitter', 'irritable', 'gloomy', 'sarcastic' and the like. Teachers prefers the less creative student. They probably find him more agreeable and more co-operative."

The space age requires much of the creative potential of today's school children. Arnold Toynbee rightly stated " To give a fair chance to potential creativity is a matter of life and death for any society."

Taylor says that *"This is all important because the outstanding creative ability of a fairly small percentage of population is mankind's ultimate asset and the only one with which man has been endowed. If the society fails to make the most of this human asset, man is throwing away his birthright of being the Lord of Creation"*

Evolution of this creative man will require changes in education, society, the culture, in total the world over. The changes require boldness, imagination and hardwork.

Interest plays an important role in every one's life because it determines what one will do and how well one will do in a particular field. What a person is interested in, will influence what he does. Thus, a person's interest affect his immediate goods as well as his more remote one's.

Some interests are results of social pressure or the desire for prestige. But interests which are developed from aptitude and aspirations are stronger, realistic and persistent than those fostered by social pressures.

Everyone possess certain interests, which makes one selective towards certain aspects of environment. These provide an important source of dynamics in one's behavior and a persons attitude is likely to find an expression in his behavior if there are no obstacles. James has very aptly, said *"without selective interest, experience is an utter chaos. Interest alone*

gives the accent and emphasis, light and shade, background and foreground intelligible perspective, in a world".

Thus a person known to be interested in physics, chemistry or biology is likely to be more receptive to things of scientific world than to poets or writers.

A child concentrates on the activities in which he is interested. Shane (1967) rightly stated "*an interest in something with which the child identifies his personal well being*". Thus if interests are developed, children are bound to master the activity and will result in success.

1.1 NEED OF THE STUDY

Review of related literature show a number of studies have been carried out related to creativity. Only studies from 1985 are considered here.

Gupta (1985) worked on Development and Evaluation of Creative Training for Grade Children. In the same year, other studies carried out were: Paranis (1985) To Construct and Standardize a Test for Measuring Creativity in Mathematics of Xth Standard Students in Pune; Rather (1985) Incidence of Dropouts and Mal Adjustment Among Students In Relation to Creativity and Social Structure of the School; Sharma (1985) An Investigation Into Achievement – Motivation, Anxiety and Value Orientation of Creative Teachers; Singh (1985) A Study of the Effect of a Specially Designed Teaching Strategy and Some Socio-Psychological Factors on Creativity Among Middle School Children; Singh, G (1985) A Study of Creative Behavior Among Adolescent From Different Cultural Backgrounds; Vasesi (1985) Cognitive Styles, Needs and Values of High and Low Creative Adolescents;

Yawalkar (1985) Development of Some Personality Correlates of Scientific Creativity.

During the year 1986, many studies were carried out: Bhogayata (1986) A Study of the Relationship Amongst Creativity, Self Concept and Locus of Control; Brar (1986). A Comparative Study of the Performance in Bachelor of Education Examination of High Creative and Low Creative Boys and Girls at Different Levels of General Intelligence and Socio-Economic Status; Dubey (1986) An Ecological Study of Education Influences on Development of Creative Thinking in Children; Golwalker (1986) A Study of Scientific Attitude, Creativity and Achievement of Tribal Students of Rajasthan; Nandanpawar(1986) Development of Linguistic Creativity Among the Students-An Experimental Study; Ram (1986) A Study of Literary Creativity in Hindi and its Correlates in School – Going Children; Raina (1986) Psycho-Social Correlates of Scientific Creativity Among High School Students; Rani (1986) Intellectual and Non-Intellectual Correlates of Creative Female School Students; Sami(1986) A Study of Relationship Between Creativity, Self-Awareness and Self-Adjustment; Sharma (1986) An Experimental Study of the Performance of High School Students of Low, Average and High Creativity as a Function of the Instructional Media and Learning Tasks in Physics; Singh (1986) A Study of Achievement Motivation and Anxiety as Correlates of Creativity in Denotified Tribal Children; Helode (1986) Expressed Characteristics of Creative Persons.

Brar (1987) studied Development of Creativity in Relation to Intelligence Among the School Children of 13 To 18 Years Age; Desai (1987) studied An

Investigation Into the Creative Thinking Ability of Gujarat State in the Context of Some Psycho-Socio Factors; Ganesan (1987) studied Knowledge Workers: Organizational Climate for Creativity; Patel (1987) studied An Investigation Into the Effectiveness of the Purdue Creative Thinking Programme on the Creative Abilities of Elementary School Children; Trimurthy (1987) studied A Study of Creative Thinking Ability of Secondary School Students in the Context of Some Psycho-Socio Factors.

In 1988, Amin : To Study the Effectiveness of Creative Thinking Programmes on the Creativity in Relation to Programme Correlates; Patel: Development of Brainstorming Technique Programme and to Study Its Effect on Creativity of the Secondary School Children; Rajagopalan: A Study of Creativity of Secondary School Students in Relation to Classroom Climate, Achievement Motivation and Mental Ability; Pearson, Anderson: Reading Comprehension and Creativity in Black Language Use, Michael : Preparing and Trying Out the Programme for Developing Creative Thinking Ability in the Students of the Age Group Between 10+ And 12+ Controlling Same Psycho-Socio Factors.

In 1989 following study was carried out by Singh, Personality Characteristics of High and Low Creative College Students.

Bhawalkar (1992) studied Prediction of Scientific Creativity Through Cognitive and Affective Variables Among High School Students. Krishnan (1993) studied Creativity : Path Analytical Study; Veeraraghavan (1997) studied Effect of Creativity Enhancement Programme on Children Studying in Classes III And IV.

During 2000, Rubenstein carried out a study Stimulating Children's Creativity and Curiosity : Does Content and Medium Matter? ; Barlow studied Deliberate Insight in Team Creativity; Thalbourne studied Transminality and Creativity.

The investigator did not come across any study where relation between interest in science and scientific creativity has been explored.

All the above indications underline the importance of studying achievement and interest in science in relation to scientific creativity.

1.2 STATEMENT OF THE PROBLEM

Study of Student's Achievement, Interest in Science and Scientific Creativity.

1.3 VARIABLES OF THE STUDY

1.3.1 Independent Variables

Interest in science, achievement in science and gender.

1.3.2 Dependent Variable

Scientific Creativity

1.4 OPERATIONAL DEFINITIONS OF THE VARIABLES UNDER STUDY

For the purpose of the present study the independent variable and dependent variable has been defined as:

1.4.1 Interest:

Guilford (1964)

"Interest is a tendency to give attention, to be attracted by, to like and satisfaction in an activity, object or person"

1.4.2 Achievement :

"Predict an individual's ability to profit from specific instructional programme or course. Measures abilities an individual has acquired as a result of specific study in a given instructional sequence".

- (The International Encyclopedia)

1.4.3 Gender :

"Refers to culturally specific assignments of traits and roles to each sex.

- (The International Encyclopedia)

According to Chodorow (1978), Horrigan (1989) and Keller (1989) -

"As children grow the male is able to objectify and control his environment and to define himself as separate from the world around him.

The female on the other hand defines herself in relation to world around her or as part of a community, in a subjective environment"

1.4.4 Scientific Creativity

Torrance (1962) has conceptualised 'Scientific Creativity' as a "Process of becoming sensitive to problems related to science, deficiencies, gaps, missing elements, disharmonies, identifying the difficulty, searching for solutions, testing and retesting of these hypotheses in science and possibly modifying and retesting them and finally communicating the results".

1.5 OBJECTIVES OF THE STUDY

- (i) To study the achievement of students in science.
- (ii) To study the interest of students in science.
- (iii) To study scientific creativity of students.
- (iv) To study the differences in scientific creativity with respect to gender.
- (v) To study the relationship between achievement in science and scientific creativity.
- (vi) To study the relationship between interest in science and scientific creativity.
- (vii) To study differences if any in the scores of fluency among high and low achievers in science.
- (viii) To study differences if any in the scores of flexibility among high and low achievers in science.
- (ix) To study differences if any in the scores of originality among high and low achievers in science.
- (x) To study differences if any in the scores of total scientific creativity among high and low achievers in science.
- (xi) To study differences if any in the scores of fluency among the students scoring high and low on interest in science..
- (xii) To study differences if any in the scores of flexibility among the students scoring high and low on interest in science.
- (xiii) To study differences if any in the scores of originality among students scoring high and low on interest in science.
- (xiv) To study differences if any in the scores of total scientific creativity among students scoring high and low on interest in science.

1.6 HYPOTHESES OF THE STUDY

- (i) There is no significant relationship between achievement in science and scientific creativity.
- (ii) There is no significant relationship between interest in science and scientific creativity.
- (iii) There are no significant differences in the scores of scientific creativity of boys and girls.
- (iv) There are no significant differences in the fluency scores of high and low achievers in science.
- (v) There are no significant differences in the flexibility scores of high and low achievers in science.
- (vi) There are no significant differences in the originality scores of high and low achievers in science.
- (vii) There are no significant differences in the total scientific creativity scores of high and low achievers in science.
- (viii) There are significant differences in the fluency scores of students scoring high and low on interest in science.
- (ix) There are significant differences in the flexibility scores of students scoring high and low on interest in science.
- (x) There are significant differences in the originality scores of students scoring high and low on interest in science.
- (xi) There are significant differences in the total scientific creativity scores of students scoring high and low on interest in science.

1.7 DELIMITATIONS OF THE STUDY

- (i) The study was confined to students of Demonstration Multipurpose school Bhopal only.
- (ii) The study was conducted only on VIIIth class students.
- (iii) The study was conducted only on 40 students.

1.8 SUMMARY

In this chapter, the investigator has discussed about the problem, the need of the study and also of operational definitions of the terms.

The objectives and hypotheses of the study have been formulated and presented.