

CHAPTER - II

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REVIEW OF RELATED LITERATURE

2.0 INTRODUCTION

Research in education as in other fields is a search for knowledge which provides the solutions of the problems in the field of education. A careful review on various research journals, books, dissertations, abstracts and other sources of information on the problem is essential for any research which helps us to know the knowledge that has been gained in the past years. This chapter deals with review of researches related to present study.

Guilford, the first dean of creativity research has been responsible for bringing about a paradigmatic shift in the study of human abilities. An outburst of work on creativity followed after his 1950 Presidential Address on the Structure of Intellect Model.

2.1 STUDIES RELATED TO SCIENTIFIC CREATIVITY AND OTHER VARIABLES.

1. **Raina (1986)** carried out an investigation entitled Psycho-Social Correlates of Scientific Creativity Among High School Students.

The objectives of the study were:

- (i) To find out the relationship between scientific creativity and achievement in science for boys and girls;
- (ii) To find out the relationship between scientific creativity and achievement in science for students of different types of schools (government, private and missionary);

- (iii) To find out the difference between correlation coefficients of intelligence with different dimensions of scientific creativity for boys and girls group;
- (iv) To study the effect of sex and type of school on scientific creativity among high school students;
- (v) To study the effect of socio-economic status, sex, problem solving ability and achievement in science on scientific creativity of students of different schools;
- (vi) To study the effect of sex, birth order and type of family on scientific creativity of students of different schools ;
- (vii) To study the mean differences in scientific creativity among high school students with high, middle and low problem solving.

Sample of the study comprised of 1000 students out of which 459 were boys and 541 girls, were taken from two missionary, eight government and fourteen private schools.

Tools Used For The Study Were:

- (1) The Gupta Scientific Creativity Test (1980).
- (2) The Manju Problem Solving Ability Test in Science (1984).
- (3) The Joshi Group Test of Intelligence (1964).
- (4) Achievement Test in Science.
- (5) Socio – Economic Status Scale.

Major findings of the study were :

- (i) Achievement in science was significantly related with scientific creativity;

- (ii) The problem solving ability was significantly related to three components of scientific creativity that is fluency, flexibility and originality;
- (iii) All the three components of scientific creativity were positively related with intelligence;
- (iv) Boys and girls differed on intelligence and fluency components of scientific creativity and girls had higher scores on these than boys;
- (v) Missionary school students were more creative than those of private and government schools and students of private schools were more creative than their counterparts studying in the government schools;
- (vi) Students who had high problem – solving ability in science were more creative in science than their peers with middle and low problem – solving ability ;
- (vii) The mean scientific creativity scores of high achievers in science was more than that of middle and low achievers. Further, the middle achievers were more creative than the low achievers in science;
- (viii) Socio – economic status of the students did not affect their scientific creativity;
- (ix) First – born students were more creative in science than the second – and third – borns. Further the second – born scored more on scientific creativity than third – born in the family;
- (x) The type of family, single or joint did not have any relationship with the scientific creativity of the students;
- (xi) Sex as a single main variable did not show significant variations in scientific creativity of students;

- (xii) The girls from missionary schools had the highest mean scientific creativity scores, whereas boys from government schools had the least creativity scores;
- (xiii) Students belonging to middle SES and having high achievement scores were highest in scientific creativity, and students belonging to low SES and having low achievement scores were lowest on scientific creativity;
- (xiv) Boys of low SES and possessing high problem solving ability had highest creativity, whereas girls of middle SES and low problem solving ability were least creative;
- (xv) Girls of single families were most creative in science, whereas girls of joint families were least creative;
- (xvi) The students belonging to middle SES with middle problem – solving ability scored the highest, whereas students coming from low SES group and having middle problem solving ability scored the least on scientific creativity.

Bhawalkar (1992) investigated Prediction of Scientific Creativity Through Cognitive and Affective Variables Among High School Students.

The objectives of the study were:

- (i) To study the relationship of scientific creativity with self – confidence, tolerance of ambiguity, intelligence, scientific attitude, academic motivation, achievement in mathematics, achievement in science, academic achievement and dependency separately;
- (ii) To establish the regression equation for scientific creativity as criterion variable and the ten independent variables;

- (iii) To study the effect and various interactions of academic achievement, intelligence, risk taking, achievement in mathematics, achievement in science, self – confidence, scientific attitude, dependency, tolerance of ambiguity and academic motivation on scientific creativity of students.

The **sample** comprised of 663 students, both boys and girls of classes IX and X from six schools situated in Indore, Ujjain and Mhow.

Tools used for the study were:

Scientific Creativity Test by Majumdar, Test of General Mental Ability developed by Jalota, Junior Index of Motivation Scale by Jack Frymer Pre – Adolescence Dependence Scale, marks obtained by students in their annual examinations, Scientific Attitude Scale by Sansanwal and Sathe, and Verbal tools by Bhawalkar.

The Results of the Investigation Were :

- (i) Students with high academic achievement, high intelligence, risk – taking, high achievement in mathematics, high achievement in science, high level of self – confidence, high scientific attitude, lesser dependency, higher level of tolerance of ambiguity and high academic motivation, separately were found to possess high scientific creativity;
- (ii) The joint contribution of self – confidence, tolerance of ambiguity, risk taking, intelligence, scientific attitude, academic motivation, achievement in science, achievement in mathematics, academic achievement and dependency in predicting scientific creativity was

found to be 43%. Further the intelligence, achievement in mathematics and academic achievement were found to be best predictors.

- (iii) The regression equation for the prediction of scientific creativity as criterion variable and self confidence, tolerance of ambiguity, risk taking, intelligence, scientific attitude, academic motivation, achievement in mathematics, achievement in science, academic achievement and dependency as independent variables.
- (iv) It was found that students with high levels of creative variables in common were found to possess high level of scientific creativity. There were found twelve combinations of the variables eg high intelligence and high risk – taking, low dependence, high achievement and high risk taking etc.
- (v) Students were found to possess high scientific creativity with level of intelligence irrespective of level of academic achievement.
- (vi) Interactive effect of independent variables on scientific creativity was studied. Scientific creativity was not found to be a function of interaction between the variables eg academic achievement X intelligence X risk – taking X achievement in mathematics X intelligence, achievement in mathematics X risk taking and achievement in mathematics X intelligence X risk – taking etc.

2.2 SUMMARY

In this chapter the investigator dealt with various studies related to the subject and their findings were discussed.