



## Scientific Creativity of Students of Higher Secondary School

### Education

**Key Words :** Scientific Creativity, Higher Secondary School

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### ABSTRACT

Prevailing era is being considered as an era of science and technology. With reference to prevailing time, it is expected to have scientific creativity in students. In this situation, it is important to understand the nature of scientific creativity in students and their scientific creative talent. This study was aimed at the study the scientific creativity of students with reference to, Flexibility, Originality and inquisitiveness aspects and in total creativity according to some variables. In this research, server method was included as sub-method of the descriptive research method. Through stratified random cluster sample selection system total 200 students were selected as a sample. In this study 'scientific creativity test' was used as a tool for the measurement of scientific creativity, which was originally created in Hindi by Mishra(1986) and researched and translated in Gujarati by Darji(1997). The data was analyzed by interpretative statistical technique. The effect of inquisitiveness was observed as far as the gender is concern. The effect of fluency, flexibility, originality and total creativity of the students of granted and non-granted school was found, while there was no significant deference in inquisitiveness

### 1.0 Introduction

Prevailing era is being considered as an era of science and technology. At every moment horizons of knowledge are expanding. New scientific inventions are coming out every-day. Scientific creativity is mother of this all scientific inventions. With reference to prevailing time, it is expected to have scientific creativity in students. In this situation, it is important to understand the nature of scientific creativity in students and their scientific creative talent. For that,

research regarding their scientific creativity measurement and even development become necessary. For the development of science, these types of researches become guide for students, teachers, parents and society. For this objective, researcher has done kind attempt to take in hand the research in the direction of scientific creativity.

### 2.0 Problem Statement

**Scientific Creativity of Students of Higher  
Secondary School**

Under Present research, students of the eleventh standard of science stream of higher secondary school of Gujarati medium in Rajkot district have been given 'scientific creativity test'. Which was originally created by K S Mishra(1986) in Hindi and it was researched and translated in Gujarati by M B Darji(1997). In this test, Student's total creativity was measured with reference to four aspects of scientific creativity. Included aspects of scientific creativity in this test are: (1) Fluency , (2) Flexibility, (3) Originality and (4) Inquisitiveness. Students scientific creativity was compared with reference to their gender, parents education level and type of the school.

### 3.0 Objective of study

Objective of this research are as followed:

1. To study the scientific creativity of students.
2. To study the difference in scientific creativity with reference to, Flexibility, Originality and inquisitiveness aspects and in total creativity between boys and girls.
3. To study the difference in scientific creativity with reference to Fluency, Flexibility, Originality and inquisitiveness aspects and in total

creativity between the students, whose parents are highly educated and whose parents are not.

4. To study the difference in scientific creativity with reference to Fluency, Flexibility, Originality and inquisitiveness aspects and in total creativity between the students of granted and non-granted school.

### 4.0 Hypotheses

1. There will be no significant difference between average index of scientific creativity with reference Fluency, Flexibility, Originality and inquisitiveness aspects and total creativity of boys and girls.
2. There will be no significant difference between average index of scientific creativity with reference to Fluency, Flexibility, Originality and inquisitiveness aspects and total creativity of the students, whose parents are highly educated and whose parents are not.
3. There will be no significant difference between average index of scientific creativity with reference to Fluency, Flexibility, Originality and inquisitiveness aspects and total creativity of the students of granted and non-granted school.

### 5.0 Variables included in study

Variables included in this study were as followed

1. Independent variable:

|                    |                                    |
|--------------------|------------------------------------|
| Gender             | Male<br>Female                     |
| Parents' Education | Highly Educated<br>Basic Education |
| Type of school     | Granted<br>Non-granted             |

- 2. Dependent variable: Scientific Creativity
- 3. Controlled variable: Standard(11<sup>th</sup> Std.) and Stream of education(Science Stream)
- 4. Interpretative variable: Interest and attitude.

**6.0 Research Area**

This research is subjected to scientific creativity so its area was 'Creativity and Innovation'.

**7.0 Type and Method of Research**

This research can be considered practical and quantative type. In this research, server method was included as sub-method of the descriptive research method.

**8.0 Importance of study**

Importance of this study can be count as this way.

- 1. Identification of scientific creative talent and measurement of scientific creativity of the students has been done.
- 2. Teacher, parents and school can take measure to preserve and enhance scientific creativity among the students who have high scientific creativity. And step can be taken for the maximum development of creativity for those who found having low level of scientific creativity.
- 3. Role of gender, mother or father's education and type of school have been checked in scientific creativity of students. Based on this information need for the guidance can be visualize.
- 4. Selection of students for the activity and program related to science field can be done with consideration of scientific creativity of students.
- 5. Based on the information of the student's scientific creativity, educational and occupational guidance can be given to them.

**9.0 Limitations of the study**

Limitations of this study were as followed.

1. In this study sample students of the 11<sup>th</sup> standard of educational year 2009-10 of science stream of the Gujarati medium higher secondary school in Rajkot district were included.
2. In this study, out of the various aspects of the creativity; Flexibility, flexibility, originality and inquisitiveness this four aspects and total creativity were included.
3. In this study, 'scientific creativity test' was used as a tool for the measurement of scientific creativity, which was originally created in Hindi by Mishra(1986) and researched and translated in Gujarati by Darji(1997). So the limitation of this tool will be limitation of this study.
4. Stratified random cluster sample selection was the system for the sample selection for this study, under that at the level of granted and non-granted school, out of the boys school, the girls school and the co-educational school; sample was selected from only co-educational school at sub-level by considering nature, time and cost.

### 11.0 Population and sample

The population of this study was constituted of total 8500 students studying in 11<sup>th</sup> standard of science stream of Gujarati medium higher secondary school of Rajkot district. From this population, stratified random cluster sample selection system was used for section of sample. In this sample, from granted school side there were total 71 students out of them 59 were boys and 12 were girls of one co-educational school shri lalbahadur Shashtri Vidhyala , Rajkot. When from non-granted side, co-educational school shri Royal science school, Dhoraji's 94 boys and 35 girls, total 129 students were included. From this two school 151 boys and 49 girls, total 200 students were selected as a sample.

### 11.0 Tool

In this study, researcher has used 'scientific creativity test' as a tool for the measurement of scientific creativity, which was originally created in Hindi by Mishra(1986) and researched and translated in Gujarati by Darji(1997).

### 12.0 Data Collection and Nature

In this study, with prior permission of selected school, student's science creativity data collection has been done by proper use of tool. Available

data was in score form so nature of data was quantitative and the measurement level of data was interval.

**13.0 Technique of data analyses**

Annalysis of received numerical data was done by interpretative statistical technique. In which the t-test was used to examine the significant difference between mean score of fluency, flexibility, originality, inquisitiveness and total science creativity of groups according to gender, education of mother or father and type of school.

**14.0 Result**

The result of data analysis is as under  
T-score of various independent variables

| Component/v ariable | Gender | Edu. of Mother/ Father | Type of School |
|---------------------|--------|------------------------|----------------|
| Fluency             | 1.13   | 0.18                   | 4.72**         |
| Flexibility         | 0.55   | 0.30                   | 4.96 **        |
| Originality         | 0.23   | 0.61                   | 3.02**         |
| Iquistiveness       | 2.88** | 0.33                   | 1.53           |
| Total Creativity    | 0.13   | 0.12                   | 4.29 **        |

\*\* Significant at 0.01 level

As can be seen from the above result the t-score of fluency, flexibility, originality,

inquisitiveness and total creativity of gender variable were found not to be significant at 0.01 level of significance , hence their related null hypotheses were not rejected. While the t-score of inquisitiveness was found to be significant at 0.01 significance level, hence its related null hypothesis was rejected. T-score of all component of science creativity of mother or father's education variable were found not be significant at 0.01 level of significance, hence their related null hypotheses were not rejected. Except inquisitiveness the t- score of other four component of type of school variable were found to be significant at 0.01 level. Hence inquisitiveness related null hypothesis was not rejected while except inquisitiveness other all components related null hypothesis were rejected.

**15.0 Conclusion of study**

1. The effect of fluency, flexibility, Originality and total creativity was not found as far as the gender was concern, while significant difference in inquisitiveness was observed.
2. Significant difference in fluency, flexibility, originality, inquisitiveness and total creativity of the students, whose parents are highly educated

and whose parents have basic education was not found at all.

3. The effect of fluency, flexibility, originality and total creativity of the students of granted and non-granted school was found, while there was no significant deference in inquisitiveness.

### 16.0 Educational Implications

1. It became possible to get information about fluency, flexibility, originality, inquisitiveness and total creativity in science of the students.
2. We can possibly identify scientific creative talent in students and after identify the creative talent we can be planning of various activity and program in the direction of creativity enhancement.
3. According to scientific creativity of students the selection can be done in science related activities and programs.
4. The result of research will be useful to give educational and professional guidance to students.

Hence, the conclusion of this study will be very useful to students, teachers, parents, counsellors and persons related with educational field.

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