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A Study of Scientific Creativity of Standard-XI Students in the Context to Their Gender

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Abstract: *In this modern world of science and technology enormous changes are seen in every field in every second. To sustain in this kind of world quality of creativity in human being is must. NEP-2020 has also emphasized on this and thus to develop scientific creativity in students is must. Creativity is itself the most creative subject of education psychology. The present study was aimed at studying the scientific creativity of standard- XI science stream English medium school students of Ahmedabad city with reference to the factors of scientific creativity: fluency, flexibility, originality, elaboration and sensitivity to problems according to their gender. In this research survey method: sub-method of the descriptive research method was used. With the help of self-made scientific creativity test for pilot study, the researcher has collected data from 100 students by using stratified random sampling method. The t-value has been calculated for getting result. On the basis of t-value it is found that there is difference between flexibility and originality factors of science creativity of girls and boys of standard- XI students and there is no significant difference between fluency, elaboration and sensitivity to problems factors of science creativity of girls and boys of standard- XI students.*

Keywords: Scientific creativity, Fluency, Flexibility, Originality, Elaboration and Sensitivity to problems

I. INTRODUCTION

In this modern world of science and technology enormous changes are seen in every field in every second. This leads to the requirement of humans with modern and distant sight. Humans are the very intelligent and thoughtful animal on the earth. Creativity is one of the most important human quality which is highly essential in this kind of era. Development of creativity in the students are the basic requirement that mention in the NEP-2020. To develop open minded and superstition free society it is mandatory to develop scientific creativity in the students. The scientific method, which is considered as a backbone of the human cognitive development, in which facts has been established by the experiments and by proving the hypothesis.Scientific creativity requires free thoughts and freedom to explore the new ideas. It is unique and specific scientific process responsible for the creative production in the field of science and technology. Thus, to develop scientific creativity in the students it is required to measure different factors of scientific creativity in the students.

Statement of the problem:

A Study of Scientific Creativity of Standard- XIStudents in the Context of Their Gender

In the Present research, standard- XIscience stream students of English medium higher secondary schools of Ahmedabad city, have been given 'scientific creativity test'. In this test, factors of scientific creativity was measured with reference to students' gender. Five factors of scientific creativity: (1) Fluency, (2) Flexibility, (3) Originality, (4) Elaboration and (5) Sensitivity to Problems. Fluency means amount of thoughts which are not repetitive. Flexibility means category of thought. Originality means new and different things which are not repeated and different from ordinary thinking. Elaboration means thinking about details in steps and is capable in explaining so that one can visualize a picture clearly. Sensitivity to problems means one can sense the problems with the things and can give original ideas to improve that things.

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II. REVIEW OF RELATED LITERATURE

Patel (2014) had conducted research on Construction and standardization of scientific creativity test for the higher secondary schools' students. Researcher had used survey method for the research. By using stratified random sampling 3200 students were selected as a sample. As a research tool scientific creativity test, standardized by Makawana (1984) was used. For data analysis t-test and correlation coefficient was used.

Sharma and Maharshi (2017) had conducted research on construction and standardization of scientific creativity test. Researcher had used survey method for the research. 370 students were selected as a sample. As a research tool verbal scientific creativity test, standardized by Dr. V. P. Sharma and Dr. J. P. Shukla was used. For data analysis t-test and correlation coefficient was used.

Bhat and Siddiqui (2017) had conducted research on Developing scientific creativity test for senior secondary school students. Researcher had used survey method for the research. By using simple random sampling 320 students were selected as a sample. As a research tool self-made scientific creativity test was used. For data analysis t-test and correlation coefficient was used.

Objectives:

Objectives of the present research were as below:

- To study the scientific creativity of higher secondary school students of standard-XI.
- To study the factors of science creativity of higher secondary school students of standard-XI.
- To study the factors of science creativity of higher secondary school students of standard-XI in the context totheir gender.

Hypotheses:

Null hypotheses of the present research were as below:

- **Ho_1** There is no significant difference between mean scores of fluency factor of scientific creativity of standard- XIGirls and Boys.
- **Ho_2** There is no significant difference between mean scores of flexibility factor of scientific creativity of standard- XI Girls and Boys.
- **Ho_3** There is no significant difference between mean scores of originality factor of scientific creativity of standard- XIGirls and Boys.
- **Ho_4** There is no significant difference between mean scores of elaboration factor of scientific creativity of standard- XIGirls and Boys.
- **Ho_5** There is no significant difference between mean scores of sensitivity towards problems factor of scientific creativity of students of standard- XIGirls and Boys.

Variables:

Variables of present research were as below:

- Independent variable: Sex (Girls, Boys)
- Dependent variable: Scientific Creativity

Area of research:

The Researcher wanted to study scientific creativity sothe area of the present research was educational psychology and creativity.

Type and method of research:

The type of present research was practical and quantitative. In this research, survey method: sub-method of the descriptive research method was used.

Population and sample:

The population of research was standard- XIscience stream students of English medium higher secondary schools of Ahmedabad city. From this population, stratified random sample selection system was used for selection of sample (sample for pilot study), i.e. 50 girls and 50 boys.

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Tool of research:

In this research, researcher has used self-made 'scientific creativity test' for pilot study as a tool for the measurement of scientific creativity.

Scientific creativity test has been developed according to the factors- fluency, flexibility, originality, elaboration and sensitivity to problems. The factors of scientific creativity with the total number of items respective to that has been shown in the following table-1.

Table- 1: Factors of Scientific Creativity Test and Items Related to That

No.	Factor Name	Total No. of Items
1	Fluency	17
2	Flexibility	05
3	Originality	20
4	Elaboration	03
5	Sensitivity to Problems	12

III. DATA ANALYSIS METHOD

In this research the t-test was used to examine the significant difference between mean score of fluency, flexibility, originality, elaboration and sensitivity to problems- factors of science creativity of students according to their gender.

IV. RESULT AND INTERPRETATION

Table - 2: Mean scores and t-values of factors of science creativity of higher secondary school students of standard-XI in the context to their gender

Null Hypotheses No.	Factors of Scientific Creativity	Mean Score		t-value	Significance Level	Rejected/Not Rejected
		Girls	Boys			
Ho_1	Fluency	52.06	51.12	0.87	NS	Not Rejected
Ho_2	Flexibility	9.72	10.5	2.24*	0.05	Rejected
Ho_3	Originality	15.74	13.24	2.27*	0.05	Rejected
Ho_4	Elaboration	7.26	7.16	0.39	NS	Not Rejected
Ho_5	Sensitivity to Problems	65.72	70.5	1.28	NS	Not Rejected

NS: Not Significant

*Significant at 0.05 level.

It is cleared from the above result that the t-values of fluency, elaboration and sensitivity to problems factors of scientific creativity of standard- XIgirls and boys of science stream higher secondary schools were found not to be significant at 0.05 level of significance, which means their related null hypotheses were not rejected. While the t-values of flexibility and originality factors of scientific creativity of standard- XIgirls and boys of science stream higher secondary schools were found to be significant at 0.05 level of significance, which means their related null hypotheses were rejected.

V. FINDINGS AND CONCLUSION

The difference between fluency, originality and sensitivity to problems factors of scientific creativity of girls and boys of standard- XI science stream students was not significant.

Calculation of t-value for finding the difference between flexibility factor of scientific creativity of girls and boys of standard- XI science stream students was 2.24 and found to be significant at 0.05 level with df (98) i.e. 1.98 . It means flexibility factor of scientific creativity in the girls and boys is not equal. As can be seen from the table-2 that mean score for flexibility factor of scientific creativity of standard- XI boys is more than the girls. That means flexibility factor of scientific creativity is higher in boys than the girls.

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Calculation of t-value for finding the difference between originality factor of scientific creativity of girls and boys of standard- XIscience stream students was 2.27 and found to be significant at 0.05 level with df (98) i.e. 1.98. It means originality factor of scientific creativity in the girls and boys is not equal. As can be seen from the table-2 that mean score for originality factor of scientific creativity of standard-XIgirls is more than the boys. That means originality factor of scientific creativity is higher in girls than the boys.

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