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## **A Study on Pre-Adolescent's Scientific Creativity Relationship with Scholastic Achievements**

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### **Abstract**

*Scientific creativity cannot be taught but can be developed in the children by using planned strategies and techniques. Divergent thinking aspects can be stimulated among the students who don't separately show it. The role of the teachers, school administration, parents and society is very important for fostering creativity among pupils. To encourage each and every student to participate all science activities organized by the department of science and technology of Indian government or state government such as children science fair, children science congress and science Olympiads and science festivals at school, block, district, state and national level.*

**Keywords:** Scientific creativity, divergent thinking.

### **Introduction**

Science educator recognized the importance of the creativity in science education, and started to work on methods and techniques which can improve creativity. In this rapidly changing world, the cultivation of a creative personality, with sensitivity and awareness for environmental problems, is not important but also of immense urgency. It has been pointed out by Hudson(1996) that scientists as more converges and artists as diverge. However to think like that scientists are not creative person is misleading because they also produce new things, ideas which are useful to the society. Gupta (1979) found in their study that general creative tests are not necessarily going to do well on tests constructed to measure creativity in different specific fields such as science, music and art. But in the present study scientific creativity is taken to be that attribute which a adolescent of a problem solving ability on a test having trying to touch every aspect of the functionary of scientific creative skill. Dhillon (1996) concluded in his study that the purpose of learning by using a research study is to help teach the scientific processes. The students undertaking a scientific research study can learn the processes of science. But it is necessary to identify scientific creativity among the students of pre secondary stage.

It is true that the creative science students have always been a subject of curiosity for teachers. Beginning from elementary school, it must be one of the most important purpose of science education for the students to gain the scientific creativity that they will need as adults and each stage of their education (Kevin 1999). Mishra (1982) found that home and school environment had significant positive relationship with scientific creativity. Sharma (1986) concluded in his study that low, average high creative physics students are comfortable on certain constructional media and learning tasks while Torrance (1974) developed the teaching strategies to encourage students to solve problems in scientific creativity. Therefore in the Indian scenario the investigator could not find any study as relationship between scientific creativity and scholastic achievements of pre-adolescents; this scarcity of research promoted the investigators to undertake the present study.

### **Definition of Terms**

**Scientific Creativity :** it can explain itself in comprehending the new ideas and concepts added to scientific knowledge, in formulating new theories in science, in giving the scientific activity plans and project originality.

**Scholastic achievements:** In the present investigation, the measure of scholastic achievement is made on the basis of marks obtained in aggregate of VI to VII class examination of science subject of previous year conducted at institutional level.

### **Objectives**

1. To study the scientific creativity of pre adolescents.
2. To study the effectiveness of scientific creativity in the terms of achievements in science.
3. To study the scientific creativity in the terms of students' sex and medium of instructions.

### **Hypothesis**

The null hypothesis for the study was there is no significant difference in the scientific creativity and scholastic achievement of pre-adolescents.

### **Methodology**

Secondary school Students (VI to VIII) studying in Dehradun city, capital of Uttarakhand state has been selected for the study. The sample of present study considered 48 Hindi medium school students (24 Boys & 24 Girls) and 52 English medium school students (26 Boys & 26 Girls) studying in class VI to VII standards selected randomly from 10 schools of Dehradun city multistage random sampling technique were used. To measure the scientific creativity of pre-adolescents a standardized tool of VTSE was used. This **VTSE (Verbal Test of Scientific Creativity)** tool was prepared by **Dr. VP Sharma & Dr. JP Shukla (1985)**. The VTSE was sub divided into four sub Tests as

The consequences Test, Unusual Used test, New Relationship Test & Just Think Why Test. Descriptive statistics like Mean, Median and Mode and SD were applied of scientific Creativity of pre-adolescent. T test was applied to find out the significance difference between means related to different variables.

### Results and Discussion

#### Mean of Scientific Creativity Scores of Pre-Adolescents

Medium of instruction of institution	Sex	No. of students	Means of scientific creativity score	Mean achievement of science
Hindi	BOYS	26	52	78
	GIRLS	24	74	89
English	BOYS	26	96	68
	GIRLS	24	102	58

Data presented in table shows that English Medium girls were taken high scientific creativity score in comparison to other counterparts. When we compare the girls and the boys in Hindi medium schools the score shows that the girls obtained better score than boys. It reveals that the girls were more confident and well skilled on the scientific attitude. This is the better indication of woman education and empowerment for new Era particular in Indian context.

#### Mean, Standard Deviation and Critical Ratio of Different Categories of Variables on the Scientific Creativity of Pre-Adolescents

SUB VARIABLES	NUMBER	MEAN	S.D.	DF	'T' VALUE	LEVEL OF SIGNIFICANT
HINDI MEDIUM BOYS	24	74	18	46	2.373**	Significant at 0.05 level
HINDI MEDIUM GIRLS	24	54	21			
HINDI MEDIUM BOYS	26	102	14	50	1.695	NS
HINDI MEDIUM GIRLS	26	96	17			
HINDI MEDIUM BOYS	24	74	18	48	0.727	NS
HINDI MEDIUM BOYS	26	102	14			
HINDI MEDIUM GIRLS	24	54	23	48	6.26**	Significant at 0.05 level
HINDI MEDIUM GIRLS	26	96	17			
ALL BOYS	52	90	20.28	98	1.08	NS
ALL GIRLS	48	84	21.92			

This table reflects that Hindi Medium Girls show a significant difference in the mean scores of scientific creativity. A lot of difference was found in the mean score among Hindi Medium Boys and girls & girls in both instructional medium. On other hand, less significant difference was found between all boys and girls, English Medium boys and girls and hindi medium boys and English medium boys.

**Lets Study this given Table here as under**

SUB VARIABLES	NUM BER	MEAN	S.D.	DF	'T' VALUE	Level of Significance
HINDI MEDIUM BOYS	24	89	6.3	46	2.61**	Significant at 0.05 level
HINDI MEDIUM GIRLS	24	78	13			
HINDI MEDIUM BOYS	26	58	14.8	50	2.01	NS
HINDI MEDIUM GIRLS	26	68	14.2			
HINDI MEDIUM BOYS	24	89	6.3	48	7.70**	Significant at 0.05 level
HINDI MEDIUM BOYS	26	58	14.8			
HINDI MEDIUM GIRLS	24	78	13	48	1.96	NS
HINDI MEDIUM GIRLS	26	68	14.2			
ALL BOYS	52	71	19.3	98	0.22	NS
ALL GIRLS	48	72	14.5			

This table reveals that Hindi medium girls show significant difference in their mean scores of scholastic achievement. Apart from girls, English medium boys also show very significant difference in the mean scores of their scholastic achievement. Critical ratio of the boys and girls, Hindi and English medium girls, English medium boys and girls don't show significant difference in the mean scores of scholastics achievements.

**Discussion**

The scientific creativity has less significant positive impact on the scientific positive impact on the scholastic achievements of male and female students. In the same view Huppert, Momask (2002) observed that scientific creativity can be gained by the students through certain science activities. These creativity results show that English medium schools produced good and similar opportunities towards science activities for their learners, the boys from English medium schools scores high mean values (M=102) than girls from same type of institution. But difference between means was not found significant statistically. This type same results were found among all boys and girls and boys in between both instruction of medium.

**Findings**

When all the students were considered together statistically there was found a positive difference on scientific creativity of hindi and English medium students. The similar finding was also obtained in case of English and Hindi medium girls students separately. I case of all students considered together or male & female separately, boys scored higher mean values than girls on scientific creativity test. But statistically there was no difference found. English medium girls were found to have higher mean scores in comparison to their counterpart hindi medium girls in respect to their scientific creativity. Sex difference was not found in the English medium schools students on their scientific creativity test.

**Conclusion**

Scientific creativity cannot be taught but can be developed in the children by using planned strategies and techniques. Divergent thinking aspects can be stimulated among the students who don't separately show it. The role of the teachers, school administration, parents and society is very important for fostering creativity among pupils. School authorities to provide better opportunity to pupils to do something for practice without the fear of evaluation. To encourage each and every student to participate all science activities organized by the department of science and technology of Indian government or state government such as children science fair, children science congress and science Olympiads and science festivals at school, block, district, state and national level.

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