

## A Study of Scientific Creativity of Secondary School Students



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### Introduction

In this study the Investigator tries to find out, understand, measure and compare the scientific creativity of the class IX students. It studies the influence of the personal and demographic variables of children on their scientific creativity. It also identifies causes for variations of their scientific creativity.

Science gives opportunities for creative thinking and constructive imagination to the learner the learner develops the habits of searching for the truth the significant aspect of science is that whatever the student learns has immediate application in the world around him and this is educationally very sound. Science has become an integral part of our life and living now in the present context we cannot think of a world without science. It is a way of penetrating into unexplored and unmastered realms. The present generation rest on the firm foundation of the scientists, that they have laid by their valuable contributions.

### Need of Scientific Creativity :

The world is changing so fast that truths often mislead instead of help. No longer it is easy to apply past truths to the problems of the present and the future. The world calls for new approaches of experience both in acquiring it and in using what we already have. Each individual must be equipped to size learning opportunities throughout life, both to broaden their knowledge, skill and abilities and to adopt to a changing complex and independent world.

Science education being an important component of education system should contribute to the solution of the problems of the country by developing desirable understanding skills, abilities. The greatest challenge is to humanize science, that is to make relevant to human needs and aspirations and in this regard, it has become indispensable to develop favourable scientific creativity and strengthen science education from the secondary level itself, so that students become good citizens of the great, proud nation. In this regard the study has attained more importance, it investigates and compares the scientific creativity of IX standard students and ascertains the factors influencing scientific creativity.

### Objectives :

- 1) To find the relationship between the scientific creativity of ninth standard girls and boys.
- 2) To find out if there is any significant difference between the scientific creativity of ninth standard government and private school students.
- 3) To find out if there is any significant difference between the scientific creativity of ninth standard kannada and English medium students.
- 4) To study if there is any significant difference between the scientific creativity of ninth standard Urban and Rural students.

### Method of Study

The sample of the study comprises 800 students of IX class of Bijapur district of Karnataka State. Out of which 420 students are from Rural area and 380 from Urban area for the purpose of collecting data, required for the investigation, the investigator visited 33 higher secondary schools of Bijapur district. The sample of 800 students of IX class was selected by simple random sampling method.

The students were explained about the purpose of the research and was requested to respond to the test, care has been taken to avoid copying. A standardized tool of verbal test of the scientific creativity developed by Dr. V.P. Sharma and Dr. J.P. Shukla was adopted for measuring scientific creativity of ninth standard students. The test of scientific creativity consists of 12 items which have been classified into sub-tests namely. 1) consequences test 2) Unusual tests 3) New Relationship test 4) Just think why test scoring technique. as suggested by Dr. V.P. Sharma and Dr. J.P. Shukla, it is to be kept in mind that each item is to be scored for fluency, flexibility and originality.

### Hypothesis :

- 1) There is no relationship between the scientific creativity of ninth standard girls and boys.
- 2) There is no significant difference between the scientific creativity of ninth standard government and private school students.
- 3) There is no significant difference between the scientific creativity of ninth standard kannada and English medium students.
- 4) There is no significant difference between the scientific creativity of ninth standard Urban and Rural students.

**Statistical treatment of the data**

To estimate the scientific creativity of class IX standard students the scores were formulated into frequency distributions and all the descriptive statistics such as Mean, Median, Mode, Range, and Standard deviation were calculated. After collection of the data, it was processed and tabulated using Microsoft Excel 2000 software. The data was analysed by using descriptive statistics, differential analysis, including t-test, one way ANOVA...by using SPSS. 16.0 statistical software and the results obtained there by have been interpreted. The total mean scientific creativity scores of students is  $99.16 \pm 55.88$  in which the female students have high scientific creativity scores ( $107.26 \pm 56.50$ ) as compared to male students of 9th standard ( $91.06 \pm 54.12$ ).

**Table - 01**

Variables		Male	Female	Total
Scientific Creativity	n	400	400	800
	Means	91.06	107.26	99.16
	Std Devi	54.12	56.50	55.16

The extent of creativity in science is more for girls, owing mainly due to their higher interest in learning science they had a creative potential in learning the science. The total mean scientific creativity scores of students is  $99.16 \pm 55.88$  in which the unaided schools have higher scientific creativity scores ( $105.41 \pm 62.49$ ) as compared to government school students ( $100.25 \pm 50.74$ ) and aided school students ( $92.85 \pm 52.65$ ). Type of management also influences the extent and nature of out-of-school science experience students of un-aided schools have more experience especially in observations related to

**Table -02**

Variables		Govt.	Aided	Unaided	Total
Scientific Creativity	n	222	307	271	800
	Means	100.25	92.85	105.41	99.16
	Std Devi	50.74	52.65	62.49	55.88

science as compared to government and aided secondary schools. Hence the authorities of government and aided secondary schools should also provide the facilities conducive to the promotion of scientific creativity and the teachers must utilize the available resources in a best possible manner to promote the scientific creativity. The total mean scientific creativity scores of students is  $99.16 \pm 55.88$ , in which the kannada medium students have higher scientific creativity scores ( $99.90 \pm 55.67$ ) as compared

to English medium students ( $98.10 \pm 56.24$ ). As the students can understand the subject very easily as kannada is their mother tongue. The findings of the study reveal that the better facilities available in a school facilitate the development of scientific creativity.

**Table - 03**

Variables	Summary	Kannada	English	Total
Scientific Creativity	n	470	330	800
	Means	99.90	98.10	99.16
	Std Devi	55.67	56.24	55.88

**Table -04**

Variables		Rural	Urban	Total
Scientific Creativity	n	420	380	800
	Means	102.14	95.86	99.16
	Std Devi	56.02	55.61	55.88

The total mean scientific creativity scores of students is  $99.16 \pm 55.88$  in which the rural school students have higher scientific scores ( $102.14 \pm 56.02$ ) as compared to urban school students ( $95.86 \pm 55.61$ ). Rural students have high creative ability compared to the urban students. Urban and rural pupils differ in their creative abilities out of school science experiences with urban pupils having more experiences than rural pupils. The reason can be the difference in opportunities. Rural pupils get opportunities for nature related direct experiences even though this is quite less for urban pupils, they receive indirect experiences through a visit to parks, zoological gardens, planetarium etc. The authorities should try to promote the educational facilities in Urban schools.

**Educational Implications :** 1) Science education is gaining lot of attention globally. We can't imagine our life without science. It is also believed that development of science is one of the most prerequisites for allround development of any economy in the world. 2) In this regard teachers should try to inspire the children, in understanding some creative, activity oriented tasks simultaneously while learning the science. 3) The process of science education should be strengthened and given priority in our educational system. Let their creative talent blossom, sprout and rise with all colors and glorify our nation with their unique innovative contributions to the field of science.

**Suggestions for further study :**

\* This investigation may be extended to a larger sample covering different levels of education. \* More elaborate studies in this area can be carried out by employing other devices of measuring scientific creativity.

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