

**AN ANALYTICAL STUDY OF SCIENTIFIC APTITUDE AT
SECONDARY LEVEL IN BILASPUR DISTRICT.****Hemlata Thakur**
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We live in world of science. Every citizen knows the wonder of science. Science gives us countless manifestations. Science now totally changed the life of mankind. Education should help the children to express and bring out their talents to limelight. The main aim of education is to help the child to grow to his fullest extent possible using all his potentialities. In this modern society, education is thought to bring about desirable changes in the behavior of its members. Science has occupied almost all spheres of human life. The wonderful achievements of science have glorified the modern world, transformed the modern civilization into a scientific civilization and illuminated the human creative potential. The term science means the same at any level. In one sense, it is a body of information and principles that help us understand the world around us from atoms to stars, from microscopic water life to man. In another sense, science may be regarded as methods of discovery, the methods by which new information is uncovered, new principles arrived at old principles modified or discarded. It is characteristic of science that it starts with a perplexing problem, proceeds with the trying of different methods of solution, and results in a new discovery. In the study of science, we learn ways of exploring in order to learn about the world. For children, the study of science consists of their exploring the world around them in order to learn about it and so answer their questions about it, the better to enjoy and appreciate their surroundings. It seems a natural thing to wonder what makes a rainbow, how magnets can pick up iron nails, how far away the stars are, how a compass can point north, and how an aero plane can stay in the air. It appears natural, too, to try out things to see how they work, to experiment, to manipulate to be curious, to ask questions, to seek answers. To learn to think scientifically is to learn those concepts and principles, which will enable one to make wise choices in deciding how to live with one's environment. This is indeed science for the citizen.

NEED OF THE STUDY

Scientific Aptitude is a potential for acquiring certain skills or knowledge. The quality of living of the people is mostly by obtaining the knowledge. The quality of the people is mostly dependent upon their knowledge and skill and how they are adjusting with different social challenges and forces. Due to technological and scientific advancements in different aspects,

people in general are expected to be in tune with such changes but this will be possible only if the people are having a strong Scientific Aptitude. The role of parents and teachers is very important in developing Scientific Aptitude among children. In the present study I shall analyze the scientific aptitude of the student. Therefore as a researcher I made an attempt to enquire into the analytical study of scientific aptitude at secondary level. Knowledge gap after review of different journal and website I found that there were no any research has been done in the field of scientific aptitude.

Review of Literature

Vyas, Vanraj P. (2014) conducted a study of Scientific Aptitude of secondary schools students in relation to some variables. Objectives are to study scientific aptitude of secondary school students. In this study he found that girls of standard X were more superior than girls of standard IX as far as their scientific aptitude concern.

Rahman A. (2013) conducted a comparative study of achievement in science of muslim and non muslim students at secondary level in relation to certain personal and institutional factors. In this study it was found that muslim and non-muslim attitude towards science, general intelligence and socio-economic status.

Magare Jitendra Ratilal (2012) studied of Scientific Aptitude of class X pupils of Nasik District. It was done on students aged 14 to 16 years. He found that

(1) The Scientific aptitude in the 10th class pupils, as a whole, was average. The distribution of it in the whole sample was normal. The development of scientific aptitude is dependent on a variety of factors. Presence of certain study skills, persistence in learning and motivation, satisfaction obtained from learning a subject, evaluation procedures that are followed in education, cultural background, socioeconomic factors, interests of pupils, attitudes are some of the important factors that promote scientific aptitude.

(2) The scientific aptitude in boys and girls was average and boys are holding high scientific aptitude than girls. 183 Now-a-days parents are treating either sex equally there was little difference in the level of scientific aptitude possessed by both boys and girls. Boys are holding more scientific aptitude than girls. The scientific aptitude was average in the aided schools the pupils of unaided schools possessed about high scientific aptitude than those of aided schools. The scientific aptitude concentration was towards high scientific aptitude in unaided schools than aided schools.

(3) The pupils studying in unaided school have a little bit high scientific aptitude than aided schools pupils. This may be due to facilities such as well equipped laboratories, good libraries, quality teaching, conducive learning atmosphere, better teacher pupil relationship, greater exposure of pupils to audio visual teaching aids, smart class rooms, proper implementation of curriculum, better supervision in unaided schools, greater exposure of pupils to science exhibition, lecture's on self development.

Kumar (1991) conducted a study on the teaching of general science and development of scientific aptitude in secondary school students. The study revealed that the scientific aptitude scores did not differ boys and girls of high group, while boys and girls of average group differed significantly.

Mukhopadhyaya (1991) conducted a cross sectional study on the effect of academic motivation and Scientific Aptitude on science aptitude of students. The study revealed that the Scientific Aptitude scores did not differ in boys and girls of high group, while boys and girls of average group differed significantly.

Suman (2009) conducted “A study of learning achievement in science of students in secondary schools in relation to their meta-cognitive skills and emotional competence.” Main findings of the study revealed that boys and girls were more or less equal in emotional competence.

Rani (2000) conducted study on the educational aspiration and scientific attitude possessed by the urban secondary and senior secondary students. The study revealed that (i) the level of scientific attitude was higher and it was not normal. (ii) Sex has an influence on the overall educational aspiration level and the education aspiration levels of boys were higher than that of girls. But it was not influence by medium of learning, level of schooling and age. (iii) Sex, medium of learning and level of schooling have no influence on the scientific attitude.

Rao (1997) conducted a study on the scientific attitude in secondary school pupils. The major finding of the study was that the scientific attitude in both boys and girls had no difference in the level of scientific attitude possessed by them.

Rao (1996) conducted a study on the scientific attitude and scientific aptitude of the pupils of Gunter District. The study revealed that (i) the scientific attitude in school pupils was average and the distribution of scientific attitude in class 10th pupils was normal. (ii) The association between scientific attitude and scientific aptitude was highly significant by positive.

Rao (1990) conducted comparative study of Scientific Attitude, Scientific Aptitude in secondary schools pupils is average and there was no influence of sex on Scientific Attitude. It was observed that Scientific Attitude in secondary schools pupils were average and Scientific Aptitude in secondary school pupils was also average.

Ghosh (1986) investigated on critical study of scientific attitude and scientific aptitude of the students and determination of some determinants of scientific aptitude. The study revealed that (i) Urban students did not show better performance in the scientific aptitude test than rural students. (ii) There was a positive relationship between scientific attitude, scientific aptitude and academic motivation.

Nellaiappan (1992) in his study on scientific attitude and interest among higher secondary biology students in relation to their learning environment found that there was a strong relationship between the learning environments of the higher secondary biology students and their scientific attitude and scientific interest.

Olatoye & Aderogba (2011) studied on performance of senior secondary school science students in Aptitude test. This study investigated the role of students' verbal and numerical abilities in students. 200 senior secondary school science students participated in the study. He found that there is no significant difference between male and female students. This study provides an empirically based suggestion for students to develop high verbal and numerical skills in order to do well in aptitude test.

MacDonald (2005) studied on retaining girls in science. The purpose of the study was to explore the effects of operation Minerva program across educational sectors with respect to the intervention experience, course and career plans and factors influencing female science retention.

Spleke (2005) worked on sex differences in intrinsic aptitude for mathematics and science. The research considers three claims that cognitive sex differences account for the differential representation of men and woman in high level careers in mathematics and science. Male are more focused on objects from beginning of life and therefore are predisposed to better learning about mechanics systems. Males have a profile of spatial and numerical abilities producing greater aptitude for mathematics.

Francis and John (2003) conducted a study on the Scientific Aptitude and reasoning ability of computer illiterate students. The study revealed that there was no difference in the Scientific Aptitude of computer illiterate and computer literate pupils. Boys and girls were also found to have similar Scientific Aptitude scores. it was also conducted that the correlation between Scientific Aptitude and reasoning ability of computer illiterate boys was found negligible.

STATEMENT OF THE PROBLEM:

“AN ANALYTICAL STUDY OF SCIENTIFIC APTITUDE AT SECONDARY LEVEL IN BILASPUR DISTRICT”

OBJECTIVES OF THE STUDY:

1. To measure the scientific aptitude of class 9th students.
2. To compare the scientific aptitude between boys and girls.
3. To compare the scientific aptitude between rural and urban students.

HYPOTHESIS OF THE STUDY:

H₀1 There will be no significant difference in the mean score of scientific aptitude between boys and girls.

H₀2 There will be no significant difference in the mean score of scientific aptitude between rural and urban students.

H₀3: There will be no significant difference in the mean score of scientific aptitude of boys between urban and rural area.

H₀4: There will be no significant difference in the mean score of scientific aptitude of girls between urban and rural area.

DELIMITATION OF THE STUDY:

- This study is limited to the Bilaspur district of Chhattisgarh state.
- Student of class 9th who are studying in C.G. board is taken only for the study.
- This study is limited to the private school of Bilaspur district.

VARIABLES OF THE STUDY:

Independent Variables- Gender, Area, Standard

Dependent Variables- Scientific Aptitude

POPULATION OF THE STUDY:

In the present study, students of standard 9th, studying in English medium C.G. board school of Bilaspur district in academic year 2017-18 were considered in the population.

SAMPLE OF THE STUDY:

In the present study, the sample of students of standard 9th had been selected from secondary schools of Bilaspur district using simple random sampling method.

TOOL OF THE STUDY:

In the present study a self made scientific aptitude test was used for measurement of the scientific aptitude of secondary school students. The test was consisted of 36 questions which were divided in three sub tests with 12 questions in each. There are three dimensions: Logical reasoning and numerical ability, Verbal Comprehension and Interpretation. Scientific Knowledge and Information. The tool has 36 items it is in question forms having four choices, one was correct out of four choices on which students has to answer. One mark has given to the correct answer and 0 mark for the incorrect answer. The students were given clear instructions as to how the question of the test was to be answer. There were time limits to 30 minutes but they were to ask to complete it soon as possible. The students were also informed about the main aim of administering the test. The scoring was done according to the scoring key developed by the investigator.

RESEARCH METHOD:

In the present study survey method is used. John W. Best says about the survey methods:

“The survey method gathers data from relatively large number of cases at a particular time. It is not concerned with characteristics of individuals as individuals. It is concerned with generalized statistics that results when data are abstracted from a member of individual cases, it is essentially cross sectional.”

The present study was aimed to examine the scientific aptitude of students and this work was to be conducted on a large mass. The survey method was the most suitable method so the researcher had selected the survey method for the present study.

TECHNIQUES OF DATA COLLECTION:

To collect the necessary data self-made scientific aptitude test was used. The researcher prepared a list and then selected schools for sample. Then, she visited the schools and requested the principals of the schools to spare headed periods for conducting the SAT of standard IX. After getting the permission of principals, the SAT was given to students to fill in their responses.

EXPERIENCES DURING DATA COLLECTION:

- The permissions of schools were granted very easily.
- The principal teachers and students has co-operated a lot of in data collection.
- Overall the researcher had learnt many new things from those experiences which she thinks, to be helpful for another study in future.

DATAANALYSIS:

Data were analyzed with help of mean, standard deviation t-test.

MAJOR FINDINGS:

Major findings on the based on data analysis of the present study are

1. Students of entire sample having lower level of scientific aptitude.
2. Effect of gender was not found on scientific aptitude. Boys and girls were equal as far as their scientific aptitude concern.
3. Effect of area was not found on scientific aptitude. Students from urban area and rural area were equal as far as their scientific aptitude concern.
4. Effect of area was not found on scientific aptitude of boys. Boys of urban and rural area were equal as far as their scientific aptitude concern.
5. Effect of area was not found on scientific aptitude of girls. Girls of urban and rural area were equal as far as their scientific aptitude concern.

EDUCATION IMPLICATIONS:

➤ Aptitude test can be used for placement purpose. If a job requires some specific skills or some particular trait in the person, it is evaluated by aptitude test.

- For academic improvement it is very important to include aptitude test in education. If a student takes an aptitude test, it will directly or indirectly tell him his strong and weak subjects.
- Scientific aptitude will be used for choosing a career. The result of the aptitude test tells us about the skills or abilities of a person.

SUGGESTIONS FOR FURTHER STUDY:

- The present study was conducted on secondary level students. A similar study can be conducted on elementary and higher level students.
- The study can be conducted for the growth and development of the students.
- Teachers should arrange indoor and outdoor activities such as visit of science related places, formation of science club, introducing new researches in science, arranging experiments etc. so that scientific aptitude can be developed among students.
- 21st century is the century of science and technology. Parents should create educational climate to develop value of scientific aptitude. For example encouragement to watch T.V. programme related to science, to play games which help to develop scientific aptitude and to form a habit of reading magazines and newspapers based on science.
- Science fairs should be held in schools to develop scientific aptitude among students. For example various competition on science subject, lectures of experts on science subject etc.

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