

# A Study on Impact of Infrastructural Facilities on Science Teaching in Secondary Schools

*Dr. Shashikanti Tripathi\**

## Introduction

Science and technology have created a phenomenal impact in shaping the life style of human beings all over the world. Infact, Science has changed the outlook of entire human society. It has reshaped and refashioned human culture with inventions widening the horizon of truth prevailing in the world. In this regard, the classroom climate plays a significant role.

Science is not just the dry accumulation of facts. It is way of thinking about things, a way to distinguish truth from fiction and a way to determine to what extent something is understood and known. Above all, it is an honest view of the world in which no idea is accepted unless it is confirmed by experiment rather than wishful thinking. Thus, all the disciplines of knowledge have gradually accepted the scientific temperament in its development paving way to development of scientific principles and methodologies in studies of all disciplines. The studies of Saminathan (1999) on the effect of information processing approach on developing problem solving ability in physics revealed that the learning through the information processing approach model was effective in enhancing the problem solving ability in physics at school level.

The commencement of science education in schools is the outcome of rapid advancements of science and technology and its ever growing importance in the modern perspectives. Because of its intellectual utilization, vocational, cultural, moral and aesthetic values, science occupies a key position in the school curriculum across the world. Thus, science occupies the pivotal position in the school curriculum. The crisis of competent and trained science teachers is a major problem of most of the rural schools. Rani (1997) studied the problems of science education and attitude of students towards science in high schools of Meghalaya. She found that there existed an acute shortage of qualified and trained science teachers and inadequate materials in secondary schools of rural areas.

The need of the present study was felt as Science is a mainstream subject in Secondary School Education but it is apparent that most of the schools run the science classes without basic infra-structural facilities required for teaching

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\*Reader, Department of Education, Mahatma Gandhi Kashi Vidyapith, Varanasi



Science. Hence, it was felt necessary to conduct this study to see the impact of infrastructural facilities on Science teaching in Secondary Schools.

### **Objectives :**

- To assess the impact of infrastructural facilities available in secondary schools i.e. rural and urban schools, Government, Private and Autonomous schools for teaching science.
- To suggest suitable ways to improve the science-oriented facilities for teaching science in secondary schools.

### **Methodology:**

On the basis of schools processed from DEO office of Bokaro District, a representative sample of 24 schools was selected by stratified random sampling technique. The schools were chosen on the basis of types of schools, i.e. Boys School, Girls School, Co-educational schools and different administrations prevailing in the schools, i.e. Government schools, Private schools & Autonomous schools.

The information was collected by the investigator through the self-developed tool. The information was contained in quantitative form. Keeping in view the nature of the data and the objectives of the present study, Statistical information pertaining to the areas mentioned hereinafter were taken into consideration for present study, Student strength in different schools, Class size in schools, Classroom conditions, Facilities of blackboards & furniture in schools, Provision in time table for science teaching, Teaching staff, Science laboratory with its area, Availability of modern instructional materials, Library facilities for science teaching including science encyclopedia and dictionary, number of science books, journals, magazines and annual grant for library etc.

### **Analysis and Findings:**

In order to study whether these groups differ significantly in their infra-structural facilities available in teaching science or not, t-values were compared. The finding obtained are presented in Table 1.



**Table 1**

Mean standard deviation, t-value and significance of difference between students studying in various schools

| Groups of Schools | Mean  | Standard deviation | 't' value |
|-------------------|-------|--------------------|-----------|
| Urban             | 66.66 | 16.30              | tur=1.24  |
| Rural             | 58.03 | 17.66              |           |
| Boys              | 59.08 | 16.14              | tbg=0.08  |
| Girls             | 46.38 | 17.72              | tgc=1.11  |
| Co-education      | 59.68 | 16.46              | tcb=0.058 |
| Government        | 53.05 | 16.28              | tgp=0.106 |
| Private           | 66.66 | 17.05              | tpa=0.50  |
| Autonomous        | 57.09 | 16.03              | tag=0.48  |

Observation of the Table shows that the t-value for students studying in urban and rural schools is not significant. This shows that these groups do not differ significantly in their infra-structural facilities available in teaching science. Hence it was found that students studying in urban and rural schools do not differ significantly in their infra-structural facilities in teaching science at the secondary schools.

In the next step, it was attempted to see the difference between boys, girls and co-educational schools in respect of infra-structural facilities available for teaching science. Adopting the paired t-test for comparing t-value have come out to be .08, 1.11 and .058 between boys and girls, boys and co-educational and girls and co-educational schools respectively. Incidentally, all the t-values are not significant. It shows that there exist no significant difference between the boys and girls as well as coeducational schools. This may be because of the fact that facilities available in teaching science depends upon financial status of the schools and this does not depend upon whether it is a boys or girls or a co-educational school.

Finally, steps have been taken to investigate the difference between Government, Private and Autonomous schools on the aforesaid aspects. The paired t-test between government and private schools; government and autonomous schools, private and autonomous schools yield the t-values 0.106, 0.50, 0.48 for the respective pairs. Interestingly, none of these t-values are significant at least at 0.05 level of significance.

### **Conclusion & Implications:**

The condition for science teaching facilities in Bokaro District of Bihar seems not satisfactory. Some schools have satisfactory level of facilities but they are not conducting practical classes properly. Most of the schools are having the instructional materials but some instructional materials are out of order.



It may be suggested that for learning science in a better way, it is essential that every school should have a science laboratory and other required facilities. The findings of the present study reveals that the infra-structural facilities available for science teaching in secondary schools were not at par with the quality of science teaching. Santa (1998) studied the influence of classroom climate and approaches to find the achievements in physics of secondary school pupils. His findings suggested that the effect of classroom climate was found significant in achievement of pupils. Authorities of different schools should take steps to identify minimum essential facilities required and try to provide those as a result of which the proper objectives of science teaching can be achieved to the maximum extent. It is also suggested that the curriculum must be reviewed and replaced by a new one. Further, the infrastructural facilities should be upgraded in rural schools so as to establish and fulfil the requirements of science teachings in rural schools.

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