



## AVAILABLE FACILITIES OF TEACHING SCIENCE IN RELATION TO SCIENCE ACHIEVEMENT TEST AMONG SECONDARY SCHOOL STUDENTS

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### Abstract

*We are living in an age of rapid changes and science is playing a dominant part in bringing about these changes. Science has provided the spring board for all the progress in our world and man has been able to conquer time and distance with its help. It is no exaggeration to say that, at present, science dominates every field of our activities. The technological advances have sought to explore and multiply the possibilities of affording more effective and comforts to living creation. Thus, from cradle to the grave, scientific discoveries and inventions have inextricably woven themselves into the fabric of human existence. The growing importance of Science and Technology in the modern world today needs no justification. It is agreed that a systematic teaching of science is must for all individuals to help them adjust to changing times and live comfortably in a modern environment. To meet this requirement a firm foundation of the elements of science should be laid at the initial stages. The secondary stage is a stage at which the children grow into adolescence and this period can become very difficult for many children. Problems of adjustments in the family, the school and the society begin to appear. The child becomes a boy or a girl with greater intellectual, emotional, social and physical maturity than the primary school child. The sense of social demands and responsibilities and resulting tensions begin to surface. Science education is the field concerned with sharing science content and process with individuals not traditionally considered part of the scientific community. The learners may be children, college students, or adults within the general public; the field of science education includes work in science content, science process (the scientific method), some social science, and some teaching pedagogy.*

**Keywords:** Available Facilities, Teaching Science, Science Achievement Test, Secondary School Students



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### Introduction

As the world is fast changing, everyday new and more things are springing up. Everywhere in the world greater importance is attached to the development of science. There have been far reach in changes the scientists are attaching greater importance towards new and more inventions. The old concepts have been changes or discarded. Latest theories laws and hypothesis have replaced the older ones. General science as distinct from the traditional subject of elementary science comprising of physics, chemistry and biology, has

its own peculiar significance which is of great educational value to the secondary school pupil. As a human Endeavour, science is dependent on human motivation. The motivation of scientific Endeavour is not hard to find. First, there is the ever present need for knowledge that men master the environment he lives in, making its subservient to his needs. Thus science is valued mostly for its practical curiosity and as a great athletic charm.

Most of the progressive minded people are in favour of a new pattern of education. In this changing new pattern of 10+2 system recommended by NCERT Science is one of the major subject to be taught in our secondary schools having to papers, namely, physical science and Life sciences. (S. Mohanty, 1996).

Education dealt with what, why and how persons learn a particular set of knowledge, skills and attitudes. Science education is the part of this learning that is concerned with persons learning science”(Yages,1978).

In recent years, the numbers of schools are fast multiplying and the student population is immensely increasing. The old concepts of imparting only general information is now being replaced by new thoughts and ideas based on scientific knowledge. Greater stress is laid on the practical applications of sciences in everyday life. School science curriculum has been focusing more attention towards developing scientific aptitude and skills of various kinds in pupils. The amount spent on these aspects can be accounted for in millions of rupees invested for the establishment of schools, laboratories, research bureaus and the like institutions and agencies. This has become a worldwide enterprise. (H.N. Savenders – “The teaching of general Science in tropical Schools”. Oxford University Press, London, Page No. 9) (H.N. Savenders – 1965).

Science is just a collection of formulae and technical terms about abstruse questions remotely related to everyday life and thought. Science is ultimately refined commonsense. It is the organized knowledge developed and possessed by men and women of the world they live in. (S.V. ‘Science’, 1963).

Hence, some of the knowledge of the present position and progress of science is necessary to obtain an adequate understanding of the world in which we live. Our mode of life has made us entirely dependent on the scientific discoveries of the half century or so. (Roy Innes, 1950).

The present study has been conceived keeping in mind importance of science teaching its status especially in terms of availability and utilization of facilities for teaching science and the level of achievements in science in general and physics in particular. A brief

review of related studies which has revealed that the status of teaching and learning of science especially in high school has not been satisfactory. There have been continued efforts by the education authorities to improve the status in terms of providing additional science equipments and other facilities as well as by conducting in service teachers training programmes. Hence there is a need for study.

### **Statement of the problem**

The study is entitled as follows Available Facilities of Teaching Science in Relation To Science Achievement Test among Secondary School Students

### **Objectives of the study**

The study has the following objectives.

1. To analyze the kinds of equipment available to teach different concepts in physics.
2. To analyze the extent and nature of utilization of different equipments available to teach different concepts in physics for VIII standards by the teacher.
3. To analyze the extent of difficulties faced by the teachers and the reasons for the same in teaching different concepts in physics for VIII standard students.
4. To analyze the learning outcomes among IX standard students, in general
  - Of boys and girls
  - Of students studying in government and private aided high schools.
5. To attempt to relate the learning outcomes in physics in relation to availabilities of equipments to teach the extent of their utilization and the difficulties perceived by teachers in teaching them.

### **Method and procedure**

#### **Sample:**

For the purpose of the study nine high schools were selected which included five private aided and four government schools. The selection of schools were mainly on the basis of co- operation that could be extended by them for the study. All these students studying in IX standard in these schools formed the sample of the students for the study. However, in such schools wherever there was more than one section of students one of the section was selected at random. In such schools where the number of students in each section was less than 30, two sections were selected. In all 348 students from both private aided and government formed the sample of students for the study. All the teachers teaching physics for the VIII students of the selected schools formed the sample of teachers for the study. This there were nine teachers. **Tools Used**

In all, three were employed in the study to collect the data related to the objectives of the study. All of them were developed by the investigator.

### **Statistical Techniques used**

Mean, Standard Deviation were computed for achievement scored in physics separately for boys and girls as well as together for private aided and government schools.

The “T” test was employed to determine the significance of difference between achievements scores in physics scores in physics of boys and girls as well as between students studying in government and private aided schools. A list of all concepts in the VIII standard physics, which came 36 was prepared. Chi-square was employed to find out what extent teachers found each of the concepts as well as each of the units (including a number of concepts taken together) were found difficult to teach. The frequencies and the percentages of equipment possessed by the schools were also prepared.

### **Major findings**

The following are the major findings of the present study.

- For teaching concepts related to measurement of pressure. Most of the schools did not possess Barometer.
- For teaching concepts related to the refraction of light. Most of the schools do not possess refraction bottle.
- None of the teachers are using the following equipment to teach different concept – Mercury, trough, Pin hole camera, simple microscope, Refraction bottle, Electromagnet, Wooden stand, cycle dynamo, electric bell and voltmeter.
- Majority of the teachers have not given reasons for not using those equipment except cycle dynamo.
- Boys in government and private aided schools do not differ significantly in the achievements in VIII standard physics.
- Girls in government and private aided schools do not differ significantly in the achievement VIII standard physics.
- Boys and Girls in government and private aided schools do not differ significantly in the achievements in VIII standard physics.
- Majority (64.8%) of teachers have perceived that it is easy to teach concept of force.
- About 66.6% of teachers have perceived that it is easy to teach concept of light.
- Not less than 65% of teachers have perceived that it is easy in teaching concept of magnets.
- About 25.9% of teachers have perceived that it is easy teaching electricity.

- Majority (46.9%) of teachers have perceived that it is easy to teach all four concepts are considered together.

### **Suggestions for Further Research**

The present study has emphasized the need for the further research in the following way.

1. The present study was undertaken within the constraints of time and cost. The findings of this study could be validated by taking a large sample.
2. This study was restricted to the achievements of students in (science) physics of IX standard only. It can also be extended to other subjects and standards.
3. The study including private aided and government schools of rural only. It can also be extended to the school of urban area.
4. The study can be conducted by comparing students perceiving state syllabus.

### **Educational Implications**

The educational implications pertaining to the study are –

1. Better facilities leads to better performance. Hence the infrastructural facilities to teach science (Physics) should be improved.
2. Intensive in service training should be given to all science teachers.
3. Utilization of the facilities to the fullest extent helps in the better performance of the Teachers and in turn helps in the better performance of the students.

### **Conclusion**

According to RMSA, the goal of high school was to prepare all students to do well in life, contributing to their well-being and the good of society. Another goal was to prepare some students to succeed in college. This committee supported the citizen science approach focused on mental training and withheld performance in science studies from consideration for college entrance. The committee encouraged their longer standing model and adopted curriculum was characterized as follows:

- Elementary science should focus on simple natural phenomena (nature study) by means of experiments carried out "in-the-field."
- Secondary science should focus on laboratory work and the committee's prepared lists of specific experiments
- Teaching of facts and principles

➤ Preparation for college education

The quality of science teaching and learning continues to be an area of concern. When it is inadequate, it is often the lack of a sufficient number of highly-qualified and dedicated science teachers. Subject knowledge is important. However, we should not neglect the need to be able to get a subject across. Secondary school science teachers may not always have the subject knowledge but they are generally adept at using the knowledge that they have to enable pupils to understand the concepts. The teacher who knows the student or the teacher who knows the subject, it's finding the balance between the two. In this knowledge bank we provide ideas for improving your science curriculum and teaching methodology to enthuse and motivate your students. The purpose of this study was to find out the available facilities to teaching Science and achievement of the secondary students for the effective implementation of the secondary science curriculum –Data were collected with questionnaire, interview and personal evaluation in the selected schools.

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