

A Study of Effectiveness of using Laboratory Method in Teaching Science at Secondary School Students

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Abstract: *One of the prime aims of the Government of India is the Universalization of Secondary Education (USE), which has resulted in large-scale expenditures in terms of additional schools, classrooms, teachers, and laboratory facilities needed to meet the challenges of providing quality 21st century education. Laboratory method in teaching science helps the students work independently become aware of the problems and give them the liberty to find the solution for the problems. This method is one of the important methods of teaching science and it forms an integral part of effective science teaching. Under this method, teacher encourages the students to derive various scientific laws and principles on their own by getting personally involved in the experiment work. Through this method, teachers develop the science process skills of various kinds in the students. Thus, any form of laboratory method can be used by the teacher. But, it is very necessary to plan and organize laboratory activities carefully. Pre-laboratory instructions should be provided by the science teacher well in advance of time as through it students will get prepared for taking active part in laboratory activities*

Keywords: Universalization of Secondary Education (USE), Laboratory method, Pre-laboratory instructions Statement of the Problem

I. INTRODUCTION

Despite of knowing the advantage of including laboratory sessions in the curriculum, most of the schools lack adequate laboratory resources. Most of the schools are equipped with out dated or worn-out apparatus defeating the purpose of hands-on training for the students. Thus, a study needs to be carried out to identify the causes of poor laboratory settings and suggest ways to improve the same.

1.1 Operational Definition

- **Laboratory method:** A planned learning activity dealing with original or raw data in the solution of problem. It is a procedure involving first hand experiences with materials or facts derived from investigations or experimentation.
- **Science:** the intellectual and practical activity encompassing the systematic study of the structure and behavior of the physical and natural world through observation and experiment.
- **Secondary schools:** a school intermediate between elementary school and college and usually offering general, technical, vocational, or college-preparatory courses

1.2 Objectives

The present study has been undertaken to identify the laboratory facilities in Secondary schools and their utilization with the following objectives:

- To identify the availability of laboratory facilities for teaching of science
- To study the utilization of available laboratory facilities in teaching of a science
- To study the effect of utilization of laboratory facilities on students' achievement in science
- To identify the importance of laboratories and their utilization secondary schools.

1.3 Scope and Limitation of the Study

Scope:

- Study is limited to B.Ed student – teacher and also the teachers working in various schools.
- Analysis has been done using the information collected through online questionnaire.
- The study is conducted only in Nirmala Memorial Foundation College of Education.
- The researcher is only taken to the B.Ed students and teachers.

Delimitations:

- The study was conducted only in English medium college.
- The study and analysis was done only in B.Ed College.
- The number of students was restricted 25.

II. RESEARCH METHODOLOGY

2.1 Qualitative Research

Qualitative research uses data which is descriptive in nature. Tools that educational researchers use in collecting qualitative data include observation, conducting interviews, conducting document analysis, and analyzing participant products such as journals, diaries, images or blogs.

Researcher had adopted Descriptive Action research under Nirmala Memorial Foundation College of Education

2.2 Tool of research Questionnaire:

Attitude Scale

A questionnaire is a research device or instrument that is made up of a series of questions

Sampling of the Present Study

Researcher has used Random Sampling Method.

III. FINDINGS AND CONCLUSIONS

Laboratory method in teaching science helps the students work independently become aware of the problems and give them the liberty to find the solution for the problems. This method is one of the important methods of teaching science and it forms an integral part of effective science teaching. Under this method, teacher encourages the students to derive various scientific laws and principles on their own by getting personally involved in the experiment work. Through this method, teachers develop the science process skills of various kinds in the students.

Thus, any form of laboratory method can be used by the teacher. But, it is very necessary to plan and organize laboratory activities carefully. Pre-laboratory instructions should be provided by the science teacher well in advance of time as through it students will get prepared for taking active part in laboratory activities.

Through such kind of pre-laboratory instructions, students will become oriented to the objectives to be attained and the procedures or methods to be adopted.

Quality education is achieved when science laboratory and the laboratory in the context of teaching and learning science is made relevant regarding research issues as well as developmental and implementation issues. It is quite obvious that the laboratory space should be available to the teacher during the planning and preparation period and available to students for special projects, makeup laboratories, etc. outside their regular class hours. Each student should have his/her own laboratory work space. To that end, science teachers must be provided with an annual budget sufficient to purchase both expendable material and equipment necessary to conduct inquiry-based learning that is believed to enhance quality learning